

Chapter 2

Dimensions of Agreement

2.1 Introduction

Agreement phenomena are a manifestation of one of the two major syntactic operations: AGREE, with the other being MERGE (cf. Chomsky 2000, 2001, 2004).¹ A study of Case and agreement thus illuminates fundamental aspects of the workings of the narrow syntax (D_{NS}) and the interplay between Agree and Merge. Agreement has three major properties: (i) matching of features; (ii) a particular syntactic configuration/relation; (iii) locality. This chapter focuses on these three properties and articulates them in important ways. They are of great importance for current minimalist theorizing, since they have a direct bearing on the issue of the nature of the computational system (C_{HL}): How much is it *derivational* or *representational*? (Epstein and Seely 2002, Brody 2002).

Once one adopts a (form of the) derivational/sequential model of the C_{HL} , the derivation D (= a set of operations) is inevitably dominated by “order/sequence” –i.e. an ordered sequence of operations in (2.1) (see Chomsky (1965) and Chomsky and Halle (1968) for early rule-based sequential derivational models). This raises an interesting theoretical question, namely, how strictly D needs to be ordered/sequential.

(2.1) Derivation D consists of a sequence of syntactic operations OP.

$$\text{Op1} \rightarrow \text{Op2} \rightarrow \text{Op3} \rightarrow \text{Op4} \rightarrow \dots$$

¹I am most grateful to Noam Chomsky, Chris Collins, and Yoshi Dobashi for much extensive discussions, invaluable thoughts, and criticisms, which have lead to substantial revision. I also would like to thank Cedric Boeckx, Marcel den Dikens, Justin Fitzpatrick, John Frampton, Anders Holmberg, Howard Lasnik, Alec Marantz, Masashi Nomura, Christer Platzack, David Pesetsky, Norvin Richards, Halldor Sigurðsson, and Shoichi Takahashi. I would like to thank Thorbjörg Hróarsdóttir and Halldor Sigurðsson for providing me with Icelandic data and Rajesh Bhatt and Sharbani Banerji for Hindi data and helpful comments. Portions of this chapter have been presented at scattered opportunities; HUMIT 2000 at MIT (August 31, 2000), TiLT 2002 at the 25th GLOW Workshop (April 11th, 2002), the Workshop on Efficiency of Derivation at the 20th English Linguistics Society of Japan (November 15th, 2002), The CUNY Syntax Supper 2004 (September 14, 2004), and many others, during which period I have received highly insightful feedback.

However, no serious attention has been hitherto paid to this question. Elsewhere (Hiraiwa 2001a, 2002a,d), I argued that the syntactic operation Agree, is a *derivationally simultaneous* operation and therefore a one-to-many relation R is established simultaneously in a derivation. I called this the theory of MULTIPLE AGREE. The leading idea is that the sequentiality is at least relaxed enough to allow an “is simultaneous with” relation as well as a “is before/after” relation in a derivation. Let us call this notion DERIVATIONAL SIMULTANEITY. Derivational Simultaneity will change the picture of D as follows.

(2.2) Derivation D consists of a sequence of simultaneous syntactic operations OP.

$$\text{Op1} \rightarrow \left(\begin{array}{c} \text{Op2} \\ \text{Op3} \\ \text{Op}_n \end{array} \right) \rightarrow \text{Op4} \rightarrow \dots$$

In this chapter, pushing further the notion of Derivational Simultaneity, I propose a PROBE THEORY OF PARALLEL DERIVATION (hereafter PTPD) under which Derivational Simultaneity plays a key role at each probe-level, and demonstrate that the proposed theory accounts for otherwise puzzling intricacies of Icelandic agreement.² In so doing, I argue that Agree exhibits two kinds of SYMMETRY: *Mirrorsymmetry* and *Centrosymmetry*.

The organization of this chapter is as follows. Section 2.2 articulates the theory of Multiple Agree and discusses its status in the context of D_{NS} and Derivational Simultaneity. Section 2.3 turns to the notion of Derivational Simultaneity in more detail and proposes that Derivational Simultaneity applies phase-by-phase, under the PROBE THEORY OF PARALLEL DERIVATION (PTPD). This, as it will be shown, is an optimal solution to the problem of cyclicity/Earliness. Another important topic of this section is the nature of a chain. I propose a refinement of the chain formation mechanism under the PTPD. Section 2.4 discusses intricacies of Icelandic agreement phenomena and demonstrates that the complexity is provided with a simple principled explanation under the PTPD. Section 2.6, building on the proposed theory, investigates the issue of optionality of agreement and the nature of the Person-Case Constraints. Section 2.7 discusses some profound implications of the PTPD and Chain Uniformity and adds further evidence for the inaccessibility of the edge of the edge of a phase discussed in Chomsky (2004, fall lectures). Section 2.8 summarizes the discussion.

2.2 Elements of Multiple Agree

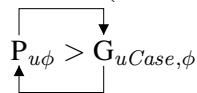
2.2.1 Multiplicity

Before introducing a theory of Multiple Agree and Derivational Simultaneity, it is useful, I believe, to briefly describe the backdrop on which these conceptions rest.

²I am indebted to Noam Chomsky for insightful comments and suggestions on the earlier versions of this chapter, which have led to much improvement and refinement.

In *Minimalist Inquiries* and *Derivation by Phase* (Chomsky 2000, 2001) Chomsky proposed a theory of AGREE, eliminating Spec-Head Agreement (Chomsky 1993) and feature-movement (Attract-F; see Chomsky 1995).

(2.3) AGREE (Chomsky 2000, 2001)



Agree (P, G), where P is a probe and G is a matching goal, “>” is a c-command relation and $u\phi$ of P and $uCase$ of G are valued.

Agree is an operation that values unvalued features – uF – of a probe and a goal. Unvalued features must be valued before the structures are sent to the interfaces, which cannot deal with unvalued features. Thus Agree is a crucial function of D_{NS} .

One of the important aspects implicit in the theory of Agree (2.3) is that it is a *binary* —viz. *one-to-one*— operation.

In the study of syntax in generative grammar, it has been generally assumed (with the exception of Ura 1996, 2000) that Case/Agreement must be founded on a strictly one-to-one relation (e.g. the Case Filter in LGB (Chomsky 1981) or George and Kornfilt’s observation that Case is tied with agreement (George and Kornfilt 1981), in that the latter implies that only one agreement can license only one Case and vice versa).³ Set in a more general context, a belief in a one-to-one relation is abundant and not limited to Case and agreement —at least in the domain of syntax; to the best of my knowledge, it was first formalized by Koopman and Sportiche (1982) in the form of the *Bijection Principle*. Another case for a one-to-one relation is θ -Theory and the theory of Selection (or subcategorization) (Chomsky 1981). Yet another instance is binary-branching structure-building (see Kayne 1984). In phonology, on the other hand, a one-to-many relation has received much support since Goldsmith’s insightful work (Goldsmith 1976) on Autosegmental Phonology (harmony/assimilation system).

In fact, multiple Case and agreement phenomena are more wide-spread than believed; four instances of multiple instantiations of Case and agreement are listed for illustration from Icelandic, Japanese, Hindi, and Malagasy.⁴

(2.4) Japanese:

Taro-**ga**/ni Hanako-**ga** me-**ga** waru-ku kanji-rare-ta (koto).
Taro-NOM/DAT Hanako-NOM eye-NOM bad-INF think-PASS-PST (that)

‘(that) Taro thought that Hanako had a bad eyesight.’

³Fukui (1986) and Kuroda (1988) advance different theories of multiple Case phenomena in Japanese, but they are crucially different in that their approaches, in contrast with our present approach, fundamentally regard the apparent one-to-many relation as an illusion. I assume, in line with Ura (1996) that multiple nominatives are a realization of structural Case. See Chapter 3 for some evidence from ECM.

⁴I will examine Icelandic participle agreement and Hindi gender agreement in detail below. See Boeckx (2004) for more data and an analysis of Hindi Long-distance Agreement under Multiple Agree. For Japanese and Malagasy, see Hiraiwa (2001a) and Sabel (2004/2005) for detailed discussions and arguments for Multiple Agree.

- (2.5) Icelandic: (H. Sigurðsson (p.c.); cf. Frampton and Gutmann 2001, Chomsky 2001, 2004)

Ólafur hefur lílega tali **einhvern** hafa verið
 Olaf(Nom) has(3Sg.) probably believed someone(Acc.M.Sg.) have been
drepinn.
 killed(Acc.M.Sg.)

‘Olaf has probably believed someone to have been killed.’

- (2.6) Hindi: (Bhatt 2003, Boeckx 2004, 3)

Vivek-ne kitaab parh-**ni** chaah-**ii**.
 Vivek-Erg book.F read-Inf.F want-Perf.F

‘Vivek wants to read the book.’

- (2.7) Malagasy: (Sabel 2004/2005)

N-ividy ny vary t-aiza Rabe t-amin’ ny talata?
 Pst-buy the rice Pst-where Rabe Pst-at det Tuesday

‘Where did Rabe buy the rice on Tuesday?’

Multiple Case and agreement phenomena pose two significant challenges for the theory of Agree: the problem of multiplicity and the problem of locality. The first problem was addressed in Ura (1996, 2000), which led him to a theory of Multiple Feature-Checking. But under Agree, feature-movement being eliminated, the second problem becomes a serious challenge since it is not clear how one can see the distant target beyond the closest one. It is these two issues that I address below.

2.2.2 Multiple Agree: The Explanatory Framework

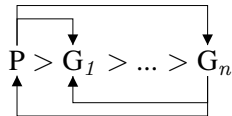
As a solution to the challenges, Hiraiwa (2001a) proposes to introduce derivational simultaneity into syntactic operations under MULTIPLE AGREE.

MULTIPLE AGREE (*multiple feature checking*) with a single probe is a single simultaneous syntactic operation; AGREE applies to all the matched goals at the same derivational point derivationally simultaneously. (Hiraiwa 2001a, 69)

Revising and elaborating the theory of Multiple Agree further, I propose (2.8).

- (2.8) MULTIPLE AGREE (P, $\forall G$)

Agree is a derivationally simultaneous operation AGREE (P, $\forall G$).



There are two fundamental properties to note in Multiple Agree: *Multiplicity* and *Simultaneity*. First, the operation Agree is unrestricted with respect to the number of elements (i.e. goals) just

as Merge —whether internal or external— is unrestricted with respect to the number of specifiers (Chomsky 2004). Second, Multiple Agree articulates the notion of “sequential derivation” in Chomsky (1965) in the sense that it reveals the crucial role played by Derivational Simultaneity —more than one operation can be applied simultaneously.

I propose that the probe P searches for and locates multiple goals in parallel computation: namely, P matches G_1 and P matches G_2 virtually at the same time. This is made possible by the Principle of Simultaneity in (2.9).

(2.9) The Principle of Simultaneity

Apply operations simultaneously in parallel at a probe level.

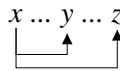
Under the principle (2.9), multiple relations are established simultaneously in parallel when more than one matching goal exists in the search domain of the probe P. Note that, under this conception, Multiple Agree should be a null hypothesis, just as Merge is unrestricted (see Chomsky 2004). The superficial one-to-one correspondence of Case and agreement (e.g. in English) is nothing but a subcase of Multiple Agree. Therefore, irrespective of whether it is singular or multiple, I will use the term Multiple Agree.

The notion of sequential derivation necessarily presupposes ordering. The significant question is whether or not a sequence allows Derivational Simultaneity (i.e. the “is simultaneous with” relation). The notion of “simultaneity” in derivation at least traces back to Chomsky and Halle (1968). Simultaneous Rule Application was explicitly rejected in SPE, mainly for empirical reasons.

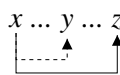
Derivational Simultaneity is closely tied with Multiplicity. Multiple Agree is a solution to the locality problem that (2.10a) and (2.10b) are representationally indistinguishable (see Hiraiwa 2001a). As long as empirical data support multiple Case/agreement phenomena, (2.10a) should be allowed. But this gives rise to a tension that (2.10b), which is a typical representation of a minimality violation, would also be allowed.

(2.10) The representational problem of locality (linear order irrelevant)

a. Multiple Agree



b. Intervention



Agree (x, z) is blocked by the intervenor y .

In Hiraiwa (2001a) I proposed that locality should be relativized to Derivational Simultaneity and hence no locality consideration comes into the derivation (2.10a).

Since then, Multiple Agree has gained more empirical support (see Chomsky 2004, Boeckx 2004, Collins 2003). Multiple Agree is a derivationally simultaneous operation. It, therefore, creates a derivational equidistance effect. As will be delineated in the next section, this does not mean, however, that an equidistance effect always holds. As I argue, valuation by multiple goals is subject

to a feature non-conflict condition under symmetric relations. Likewise, Multiple Agree does not allow x to attract z over y .⁵

2.2.3 Symmetry and Asymmetry of Multiple Agree

Agree is asymmetric in the sense that it starts only top-down. This is not an asymmetry intrinsic to the operation itself; rather it comes from the general architecture of derivation (c-command, bottom-up structure-building, the Locus Principle (Collins 2001b) etc.). On the contrary, I argue that the operation Agree itself is symmetric. I provide three kinds of symmetries of Agree here.

The first symmetry of (Multiple) Agree is simple, but is not explicitly detailed in Chomsky's version of Agree. The operation Agree is a complex bi-directional operation consisting of two symmetric relations.

(2.11) Decomposition of Multiple Agree:

- a. Value (P, G)
- b. Value (G, P)

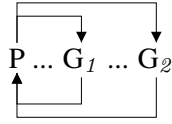
Typically, Value (P, G) values uCase of G and Value (G, P) values u ϕ of P. One might wonder how G “probes” for P “upwards”, even though G is c-commanded by, but does not c-command, P. But as stated at the outset of this section, the asymmetry between P and G only exists at the initiation of the operation Agree; once P starts probing and locates G, everything else is automatic.

The second symmetry exhibited by Agree is *Mirrorsymmetry* and *Centrosymmetry*. This is closely related to the first symmetry detailed just above. Note that in binary Agree (2.3) (which is just a subcase of Multiple Agree), the situation is simple; the two Value relations are bi-directional. But the situation changes once we consider the geometry of Multiple Agree. From (2.11) it follows that two natural symmetric relations should be allowed as in (2.12). I term them *Mirrorsymmetry* and *Centrosymmetry*, respectively.

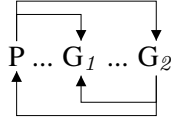
⁵Whether Multiple Agree creates an equidistance effect for Move is an interesting issue. Icelandic facts argue that it does not; for example, there is no raising-over-subject in (i).

- (i) Icelandic: *Raising-over-Experiencer (Thráninsson 1979)
 - a. *Ólafur hefur virst þeim vera gáfaður?
 Olaf(Nom) has seemed 3Pl.(Dat) to-be intelligent
 ‘Olaf seemed to them to be intelligent.’
 - b. þeim hefur virst Ólafur vera gáfaður?
 3Pl.(Dat) has seemed Olaf(Nom) to-be intelligent
 ‘Olaf seemed to them to be intelligent.’

(2.12) a. MIRRORSYMMETRY



b. CENTROSYMMETRY



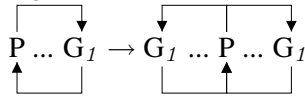
Multiple Agree establishes a one-to-many relation from probe P to goals G. This is typically an instance of Multiple Case valuation (the upper arrows in (2.12)). But ϕ -valuation needs some caution. Under the mirrorsymmetry, G_1 and G_2 are both probes for the goal P. Under the centrosymmetry, the lowest G_2 is the probe and the G_1 and P are the goals. The question is empirical and in the discussions that follow, I demonstrate that both symmetric relations are attested in Icelandic.

But one word of caution is in order here. Multiple Agree appears to be incompatible with George and Kornfilt's thesis that agreement and Case are closely tied (George and Kornfilt 1981; see also Boeckx 2000 for support of the thesis). This is because of the fundamental asymmetry that while Case can be realized on multiple goals by a single probe, the probe cannot receive multiple valuation by the goals. Thus under the centrosymmetric Multiple Agree, G_1 gets its uCase valued by P but it does not value P's $u\phi$. The issue, I argue, is superficial; as long as Multiple Agree is on the right track, the essence of George and Kornfilt's thesis is to be reinterpreted as follows: Case and agreement are closely tied in the sense that $u\phi$ and uCase are essential factors for initiating the operation Agree, but there is nothing more beyond this initiation.

The third symmetric relation that Agree shows is *The Conservation Law of Agree*. When Merge applies to a goal G, giving Merge (P, G), the Agree relation between the probe and the goal is retained after Merge. The simplest case under consideration gives mirrorsymmetry between the right and the left as shown in (2.13). More concretely, in the following representation, G_1 has undergone movement to the specifier of the probe P. According to the law, the relation between P and G_1 before the movement is retained after the movement.

(2.13) THE CONSERVATION LAW OF AGREE

Agree relations are unchanged and retained after Merge.



This principle will be shown to play an essential role in some instances of agreement that manifest an interplay of movement and agreement.

2.2.4 Efficiency of Multiple Agree

The operation Multiple Agree is essentially unrestricted in that it has to search all the goals in a given search domain (hence the universal quantification in (2.8)). The larger the search domain becomes, the more inefficient becomes the computation. Thus under Multiple Agree it is quite important to have the search computation minimized. Fortunately, phase theory (Chomsky 2000, 2001, 2004) greatly contributes to this; it limits the search space to a phase domain due to the Phase Impenetrability Condition (PIC).⁶ Secondly, Match also does significant work. With the Match condition, a probe *P* can only search for goals relevant to it. The Activity Condition (see Chomsky 2000, 2001) has a further restricting effect; *P* can see only matching and active goals within its search domain (i.e. phase).

Multiple Agree brings about one significant theoretical implication here. It should be noted that the notion of Derivational Simultaneity integrated in Multiple Agree means that there is no “time” (more precisely, *relative sequence*) at the point of its application. In a derivational model, the effect of simultaneity is non-trivial. Consider structure-building. Merge has an effect of building up a hierarchy among syntactic objects precisely thanks to the existence of a sequence or “timing” difference. Without any sequence, no hierarchy can ever exist. Suppose there is *x*, *y*, and *z*. We can obtain a hierarchical structure [*x* [*y*, *z*]] because *x* is Merged *after* *y* and *z* are Merged. Without sequence, no hierarchy emerges but *n*-ary branching,

Then the question is whether Multiple Merge as a single simultaneous operation exists. The existence is the null hypothesis given the universality of operation-level Derivational Simultaneity as allowed in Multiple Agree. Even a cursory look at the literature, however, shows the contrary. The operation Merge —Internal or External— is, as a matter of fact, apparently strictly binary (Kayne 1984, 1994; but see Yang 1999 for a relevant discussion against this). Why is this so? The answer seems to lie in the architecture of the language faculty. Syntactic objects created by D_{NS} are severely constrained by the interface conditions. In particular, Merge, in contrast with Agree, directly feeds linearization at the PF Interface, which, unlike the narrow syntax, requires every relation *R* to be linearly and uniquely ordered on the one-dimensional plane (see Kayne 1994 and Moro 2000 for relevant discussion. See also Collins (1994) for a proposal from an Economy principle.). Multiple Merge, as conceived above, comes into direct tension with the PF interface —one cannot utter two occurrences of a syntactic object simultaneously. Thus Multiple Merge is either prohibited or is allowed only under special circumstances, although the operation Merge is unconstrained in narrow syntax. In the last section of this chapter, I argue that in fact Multiple Internal Merge (as a single simultaneous operation) exists in the form of ATB-movement and varieties of raising out of DP.^{7,8}

⁶N. Chomsky p.c. suggests an alternative theory of Phase, in which a probe can look into any lower phases and agrees with a goal within them, as long as it does not result in phonological changes. See also Nissenbaum (2001) for this version of the theory of Phase Impenetrability Condition.

⁷See Yang (1999) for an argument for Multiple External Merge.

⁸If there were a language system that had an equivalent of Merge but lacked the PF interface, Multiple Merge should be prominent in that system. It would be interesting to investigate Sign languages in this light.

2.2.5 Locality

Since Luigi Rizzi's important work on Relativized Minimality (Rizzi 1990, 2001, 2004), it seems to be uncontroversial that locality is feature-based (see Minimal Link Condition in Chomsky (1995) and Defective Intervention in Chomsky (2000, 2001)). One controversial issue is at which point the locality principle is applied to a phrase marker. Under the current theorizing, there are only two possibilities; either (i) locality applies to a phrase marker at the point of application of syntactic operations (Collins 1997, Ura 1996, Hiraiwa 2002a among others) or (ii) it applies to a phrase marker at TRANSFER (see Chomsky 2001, 2004). I assume that this is an empirical issue and hence demonstrate that in fact (ii) has to be right given empirical evidence we will see below.

- (2.14) Phase-Evaluation Theory of Locality (Chomsky 2004)
 Locality is evaluated on chains at TRANSFER.

2.3 Derivational Simultaneity and the Probe Theory of Parallel Derivation

2.3.1 Derivational Simultaneity and Efficiency of Computation

Now once we introduce Derivational Simultaneity into the picture, an interesting question emerges: how much simultaneity is allowed in a derivation D and how is it constrained? In other words, at which level does Derivational Simultaneity work? Consider (2.15).

- (2.15) Levels of Derivational Simultaneity
- a. All (an instantaneous model; D-Structure of GB/OT syntax)
 - b. Phase (CP/ v^* P/DP; a “phase-internal” GB/OT syntax)
 - c. Probe (C, T, v^* , D)
 - d. Operation (Hiraiwa 2001a)

The lowest level of simultaneity (2.15d) is the one that I proposed in the theory of Multiple Agree; any given operation is derivationally simultaneous. The other end of the extreme (2.15a) is what might be called the totally instantaneous model, under which everything —Agree, Internal/External Merge, etc.— occurs at once. This is virtually what is assumed to happen in building D-Structure in the GB model or Optimality Theory. In between these two extremes, there are multiple possibilities, among which I consider two candidates. (2.15b) is a position that I believe Chomsky takes in BEA (Chomsky 2004). Under this view, a derivation proceeds phase-by-phase; everything happens—including Agree and External/Internal Merge— simultaneously within a phase. (2.15c), on the other hand, restricts Derivational Simultaneity to each probe-level.

In the discussions that follow, I will advocate the probe-level Derivational Simultaneity (2.15c). Namely, I propose that syntactic operations always apply simultaneously at each probe-level and argue that this is an optimal solution of the problem of Earliness. An interesting case arises when a probe contains more than one probe feature. The Principle of Simultaneity (2.9) requires that all probe features apply syntactic operations simultaneously in parallel.

(2.16) The Principle of Simultaneity

Apply operations simultaneously in parallel at a probe level.

I also propose, following Chomsky (2004) (cf. also Hiraiwa 2001b), that C is the locus of Operator-features and ϕ -features. At the CP probe-level, C comes with two features, Op-features and Agreement features (called ϕ -features). At the CP phase-level, ϕ -features percolate down to T, but C and T work as if they were a single system (independently supported by the conclusions reached by Watanabe (1993), Hiraiwa (2001b), Pesetsky and Torrego (2001) among others).⁹

(2.17) Agreement features, Op-features, and EPP reside on C.

I assume that EPP can work on its own or in conjunction with the other two features or both (see Chapter ??). In the case of Icelandic, we can summarize all the three possibilities as follows (cf. Hiraiwa 2002a for a parametrization among Scandinavian languages).¹⁰

- (2.18) a. EPP_{Op} : \bar{A} -movement to [Spec, CP]
 b. EPP_{ϕ} : A-movement to [Spec, TP]
 c. EPP: Stylistic Fronting to [Spec, TP]

It is crucial here to recall that Derivational Simultaneity applies at a probe-level. It follows, then, that Agree (T_{ϕ}, DP_{ϕ}), Merge (T_{ϕ}, DP_{ϕ}), and Merge (C_{Op}, DP_{Op}) apply *simultaneously in a parallel fashion*. Let us call this model THE PROBE THEORY OF PARALLEL DERIVATION (henceforth PTPD).

It is important to add a few words. Under the assumption that C is the locus of features, the entire model gets closer to the BEA theory of “derivation-by-phase” in the sense that it looks as if everything is taking place at a phase-level. This is a result of two coincidences, however: C happens to be the locus of multiple probe features (see (2.17)) and C happens to be a phase head. It should be very important to bear in mind that nothing forces an application of a given operation to be “delayed” until the CP phase-level. Rather the PTPD is a consequence of an interplay of Derivational Simultaneity and the (incidental) fact that Op-features and ϕ -features reside in C.¹¹ That is, if a functional head x that has an active probe feature uF has been introduced before the derivation reaches a phase level, Agree must apply no later than at that point. But the actual look is misleading since—at least under our theory in this thesis—there happens to be no such x within CP-phase (to the extent of our current understanding), and it happens to be the case that EPP, Op-features, ϕ -features are all located in C. This gives rise to the appearance that syntactic operations

⁹Alternatively, the locus of ϕ -features is T, but they need an activating agent, namely finite C. The choice of one of these alternatives does not affect the argument here. For convenience, I will use the expression like “T’s ϕ -features” but it should be kept in mind that both ϕ -features and Op-features start probing simultaneously. C. Collins (p.c.) suggests another possibility that C and T come with u ϕ -features and that “feature percolation” corresponds to Agree (C, T).

¹⁰I do not know any clear case in Icelandic where pure EPP attracts an element to [Spec, CP], but one possibility is the expletive *það*, which has been argued (Sigurðsson 1989) to undergo movement to [Spec, CP]. See Sigurðsson (1989) for evidence. In Chapter ??, I argue extensively that Bùli attests EPP on C, which attracts the closest element to [Spec, CP].

¹¹Of course, u ϕ -features are not limited to C: as we will see below, participles in Icelandic also have u ϕ -features to be valued.

wait and apply only at a phase level. But this is an illusion and the PTPD is in this sense not a law or principle, but rather a mere consequence of Derivational Simultaneity.¹²

Another important point to note is that the PTPD is an optimal solution for the C_{HL} in the light of Cyclicity and Earliness.

- (2.19) Apply syntactic operations (Merge and Agree) as soon as possible. (Pesetsky 1989, Collins 2001b)

Let us see what this means. Assume that we start with a root \sqrt{r} (“V”/“N” in traditional terms: see Chapter ??). \sqrt{r} may or may not select for an argument. Suppose it does and call the selected argument z . Then Merge (\sqrt{r} , z) occurs (z may have been constructed in another workspace in a parallel computation). Then C_{HL} takes v^* , leading to Merge (v^* , \sqrt{r}), followed by T, which is External-Merged with v^*PT and it is External-Merged with v^*P .

Notice that everything is strictly cyclic and sequential, conforming to Earliness Principle (2.19) so far. Now C is Merged with TP. This C, a phase head, happens to be the locus of EPP and ϕ -features (and sometimes Op-features). To make the picture clearer, suppose that C comes with EPP, ϕ -features and Op-features in this derivation. Then what is the optimal action for C_{HL} to conform to Earliness? The answer is simple, namely, Derivational Simultaneity: all the probe features start probing simultaneously, running parallel simultaneous computations and eliminating relative sequence between the operations. If, on the other hand, one of the features probed before/after another of them, there would be “waiting time”, which contradicts Earliness in a strict sense.

But if all of them probe simultaneously, it is a perfect solution for Earliness. The notion of Derivational Simultaneity is in a sense a privilege of D_{NS} and in fact a null hypothesis (Hiraiwa 2002a); it is free of the PF interface constraint of linearization; the linguistic sound system of human beings is a strict linear sequence of sounds, as stated in Section 2.2.¹³

2.3.2 Parallel Derivation

Probe-level Derivational Simultaneity in effect drives parallel computations because multiple operations can target the same phrase marker and hence the same single occurrence of an element. In other words, simultaneous access to the same single element by multiple probes is obviously a

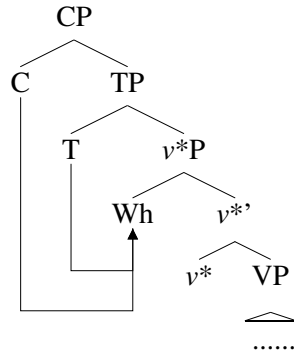
¹²The hard problem is how to ensure that EPP-driven ϕ -features dislocate an element to [Spec, TP] not to [Spec, CP]. At a gross approximation, it is as if C_{HL} were trying to avoid congestion at the phase edge, distributing moved elements over different specifiers of different heads. This is to some extent similar to what happens in “Tucking in” in Richards (1997); the tucking-in movement apparently violates Cyclicity and the Extension Condition, but it is a perfect solution under what he calls Featural Cyclicity. The two cases differ in that the former takes place over two functional heads, but in terms of Featural Cyclicity, they are both fine.

¹³Strictly speaking, it is possible that basic tree-building by External Merge of functional heads (Merge (T, v^*P), Merge (C, T) etc.) also occurs simultaneously with the other operations Agree/Merge. In this chapter, we have assumed, without argument, that C_{HL} can take one element at a time. Thus it is illicit for C_{HL} to select, v^* , root, and T at the same time and to Merge them together. Thus in reality, at a phase-level, nothing like a traditional tree exists. Rather all that exists are relations and chains (Imagine a space where functional/lexical heads are “floating” and they have various relations (Merge, Agree or Select with each other)). I leave the issue open here for future research. Thus I assume that applications of External Merge such as Merge (v^* , V), Merge (T, v^*P) as well as Merge of arguments within v^*P are sequentially ordered. These create the familiar hierarchy, but it is not immediately clear how such a hierarchy is created if even External Merge is simultaneous.

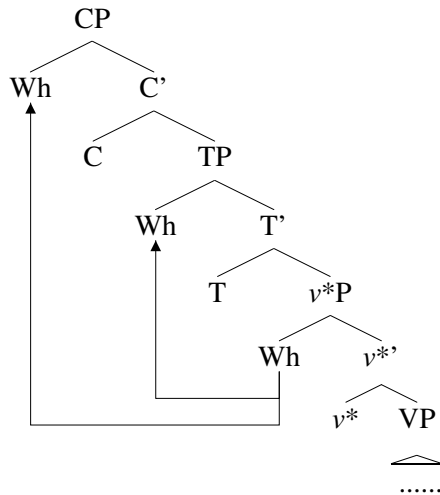
mirror image of Multiple Agree, which is simultaneous access of multiple elements by the same single element.

The effect of parallel derivation becomes apparent when the subject DP is a *Wh*-element. The probes *C* and *T* respectively access the same single *Wh*-element at the edge of v^*P , dislocating it to [Spec, CP] and [Spec, TP], simultaneously.

(2.20) Agree under the PTPD



(2.21) Internal Merge under the PTPD



One immediate consequence of the PTPD is that there is no \bar{A} -movement from a derived A-position (i.e. [Spec, TP]). To see why, consider again the derivation where *C* comes with ϕ -features as well as Op-features. Both of these probe features start probing simultaneously in parallel. Suppose that the subject is a *Wh*-phrase. Internal Merge (T_ϕ, DP_ϕ) and Internal Merge (C_{wh}, DP_{wh}) apply simultaneously to the occurrence of the subject DP in [Spec, vP]. This is because of the elimination of a sequence between the two operations. As it will be depicted later, this plays a crucial role in explicating the intricacies of Icelandic agreement.

It is probably helpful to clarify some suspicions raised by Epstein and Seely (2002) about the

notion of Derivational Simultaneity. Phase-level simultaneity may seem to be countercyclic and hence to violate Earliness, but that is only apparent; all the relevant probe features (Op-features, ϕ , and EPP) reside in C. Or alternatively, T's ϕ -features need to be activated by C. In either case, once C is merged, probes start probing simultaneously. Everything is cyclic. Derivational Simultaneity is an optimal solution to Earliness; if operations were not simultaneous, whichever probe acted first, the other would have to wait. But if they probe simultaneously, that is the most efficient and in fact the only way to satisfy Earliness Principle.¹⁴ Epstein and Seely (2002) also point out that the derivational simultaneity leads to a non-derivational (or less derivational, I would say) theory. But I do not see any a priori conceptual problem with probe-level Derivational Simultaneity or with the “less derivational” character that it leads us to envision. As Brody (2002) correctly observes, any “derivational” theory would be at least weakly representational.¹⁵

2.3.3 On Chains

“Chain” in a traditional sense is a complex notion. To see this, consider a chain of the element *who* below.¹⁶

(2.22) Who likes the theory?

This chain consists of the following positions or occurrences.

(2.23) $[_{CP} \text{who} [_{C'} C [_{TP} \text{who} [_{T'} T [_{v*P} \text{who} [_{v*'} v^* [_{VP} \text{like the theory}]]]]]]]$

{who_{CP}, who_{TP}, who_{vP}}

Each local movement is driven by EPP (conjunction of EPP and ϕ - or Op-features). In this sense, the chain above is heterogeneous; in traditional terms, this entire chain consists of an A-movement chain and an \bar{A} -movement chain.

- (2.24) a. A-Chain: {wh_{TP}, wh_{vP}}
 b. \bar{A} -Chain: {wh_{CP}, wh_{TP}}

There is another sense in which the \bar{A} -Chain above is heterogeneous; it involves the head of the A-Chain. Furthermore, the notion of A-/ \bar{A} -movement has to be a mere notational convenience under the minimalist framework. Whereas it is empirically adequate, the distinction should be eliminated or derived from something else that already exists in the system. But where does it come from? The A-/ \bar{A} -distinction cannot be reduced to phase-edge vs. non-phase edge positions (see the v^*P edge,

¹⁴See Hiraiwa (2001b) and Chapter 3 for the view that T's ϕ -features probe in conjunction with C in Case and agreement phenomena in Japanese, Quechua, and Turkish. The other story is also theoretically possible, where C's ϕ -features (metaphorically or physically) “percolate down” to T as pointed out by Noam Chomsky (p.c.). A study of feature distribution within DPs may provide a key to the issue. I leave the matter open here.

¹⁵Epstein and Seely (2002) cast doubt on Multiple Move, but I argue that it (more specifically, Multiple Internal Merge) does exist under certain conditions. See Section 2.7.4.

¹⁶I am deeply indebted to Noam Chomsky for extensive discussions and help with the ideas discussed in this section.

where the subject is in an A-position, but a shifted element is in an \bar{A} -position). The introduction of an A- vs. \bar{A} -feature distinction complicates the theory. A simple answer is, then, that the distinction is determined by the features involved; once a feature that is the trigger of a given movement is saturated, the chain is complete (see Hiraiwa 2003a). The notion of chain saturation brings to light an important aspect underlying the nature of a chain: chain formation is driven by “a feature”. So the chain (2.23) really consists of two feature chains with generalized pied-piping, CH_ϕ or CH_{wh} . Then it seems natural to think that there are as many chains as there are features involved.

Now consider (2.23) under the PTPD. Both the probes ϕ -features and Op-features start probing simultaneously and each of them access the same element, namely *who* in [Spec, v^*P]. Therefore, each forms a distinct chain with the target element in [Spec, v^*P], as shown in (2.21). The resulting chains formed are as follows.

- (2.25) a. Chain_{wh}: {who_{CP}, who_{vP}}
 b. Chain _{ϕ} : {who_{TP}, who_{vP}}

An Externally-Merged position (i.e. a thematic position) is, as it were, an intersection of multiple “dimensions”: A-movement takes place from there, while \bar{A} -movement starts from there, too. Now as a principle to deal with the uniformity of chains, I propose the following principle.

(2.26) CHAIN UNIFORMITY PRINCIPLE

Suppose a goal y has undergone External Merge with a probe h and then, another higher probe x has undergone Internal Merge with the goal x . Then:

- a. Merge (x, y) splits a chain if features of x and h are non-uniform.
 b. Merge (x, y) unifies a chain if features of x and h are uniform.

The uniformity of a chain is determined by the features involved. I propose the following two classes of features.

- (2.27) a. Class A: θ, ϕ
 b. Class B: Op

Let us take the concrete case at hand. In this case, h is v^* the goal y is *who*, and the probe x is C’s Op-feature and T’s $u\phi$ -features. Suppose that selectional features (e.g. θ -features) and ϕ -features form a uniform class, excluding Op-features —a natural assumption, given that the former are phase-internal features whereas the latter are edge-features. Then the end result of the chain formation is as follows. The \bar{A} -chain (i.e. movement from [Spec, v^*P] to [Spec, CP]) is split into two single-membered chains, Chain_{wh}: {who_{CP}} and Chain _{ϕ} {who_{vP}}, and the A-chain (i.e. movement from [Spec, v^*P] to [Spec, TP]) is unified into Chain _{ϕ} : {who_{TP}, ~~who_{vP}~~}, with the lower copy deleted.

- (2.28) a. Chain_{wh}: {who_{CP}}
 b. Chain _{ϕ} {who_{vP}}
 c. Chain _{ϕ} : {who_{TP}, ~~who_{vP}~~}

This derives as a consequence that A-movement does not leave a trace/copy, as proposed in Lasnik (1999). At the same time, it also means that (intermediate steps of) \bar{A} -movement does not leave a trace/copy, either. This is a desirable result given the fact that successive cyclic movement of an object *Wh*-phrase via [Spec, v^*P] to [Spec, CP] does not interfere Agree (T, SUBJ). This point is illustrated in Section 2.4.¹⁷

So far the arguments have been purely conceptual. In the next section, I will show that the mechanism provides a principled explanation for a complicated Icelandic agreement system, which is unexpected under previous frameworks.

2.4 Dimensions of Agreement in Icelandic

In this section, we will examine the intricacies of Icelandic agreement phenomena in detail and demonstrate how Multiple Agree and the PTPD explain these facts, disentangling the threads of intricacies one by one.

Before starting, I will make explicit some assumptions about Icelandic. The following two are of particular importance. First, I assume that objects in Dative-Nominative constructions, both dative and nominative elements are quirky: they have uCase and an inherent Case.

(2.29) In Dative-Nominative configurations:

- a. “Dative” subject DPs have uCase as well as inherent dative Case.
- b. “Nominative” object DPs have uCase as well as inherent nominative Case.

Second, I make explicit the assumptions about default number agreement (i.e. 3rd person singular) in Icelandic. The first clause is an empirical observation based on the facts that only nominative elements can control agreement in Icelandic (see Sigurðsson 1996). The second clause will be clarified in the next section.

(2.30) Default agreement obtains in either of the following structures:

- a. T’s only goal G is a quirky element.
- b. T’s goals have different feature values.

Icelandic exhibits a subject-predicate agreement (see Sigurðsson 1989, 1996 among many others). Subject-predicate agreement in Icelandic involves number and person.

(2.31) Icelandic: (Sigurðsson 1996)

- a. Stráarnir **leiddust/*leiddist.**
 boys(D.Nom.Pl.) waked-hand-in-hand(3Pl./*3Sg)
 ‘The boys waked.’

¹⁷C. Collins (p.c.) points out that the Chain Uniformity Principle makes it harder to capture phenomena that have been attributed to chains (e.g. reconstruction). I do not have any good solution to this issue. Technically, the issue might be solved if the chain splitting/unification takes place after syntactic objects have been transferred to the C-I interface, but ultimately, a more substantial explanation will be required.

- b. Við **höfðum/*hafði** lesið bókina.
 we(1Pl.) had(1Pl./*dflt) read book(D.Acc.Sg.)
 ‘We had read the book.’

Participles in Icelandic also show agreement with subjects. Participle agreement involves number, gender, person, and Case.

(2.32) Icelandic: (Sigurðsson 1996)

- a. Stelpurnar voru **kosnar**.
 girls(D.Pl.F.Nom) were elected(Pl.F.Nom)
 ‘The girls were elected.’
- b. Strákarnir voru **kosnir**.
 boy(D.Pl.M.Nom) were elected(Pl.M.Nom)
 ‘The boys were elected.’

The fact that participles agree in Case is shown in ECM/Raising-to-Object constructions as we see in the discussion below.

(2.33) Icelandic: (H. Sigurðsson p.c.; Frampton and Gutmann 2001, Chomsky 2001, 2004)

Ólafur hefur lílega tali **einhvern** hafa ver
 Olaf(Nom) has(3Sg.) probably believed someone(Acc.M.Sg.) have been
 drepinn.
 killed(Acc.M.Sg.)

‘Olaf has probably believed someone to have been killed.’

With this background in mind, let us go into intricacies of agreement in Icelandic.

2.4.1 Symmetry of Agree

Holmberg and Hróarsdóttir (2003) report an interesting observation about agreement in Transitive Expletive Construction (TEC). As shown in (2.34), if the intervening quirky dative is singular, plural agreement is blocked (2.34a). If, on the other hand, both the intervening quirky experiencer and the downstairs nominative subject are plural, plural agreement becomes licit or remarkably improves, while singular/default agreement is also allowed as in (2.34b). It is important to note that singular/default agreement in (2.34a) and plural agreement in (2.34b) do not come from the quirky dative elements. (2.34c) shows that the quirky dative cannot value the probe’s $u\phi$ -features; even if the quirky dative is plural. Plural agreement is not possible unless the nominative object is also plural.¹⁸

¹⁸Halldor Sigurðsson (p.c.) pointed out to me that there are some speakers (including himself) who find the plural agreement in (2.34a) fine. In other words, these speakers do not detect any intervention effects in those constructions. This difference may be explained in terms of syntactic differences of TEC between the types of speakers; for those who find (2.34a) good with plural agreement, TEC is probably derived by multiple specifiers, where both the expletive and

(2.34) Icelandic: TEC (Holmberg and Hróarsdóttir 2003, 2004)

- a. það **finnst/*finnast** einhverjum stúdent tölvurnar ljótar.
EXPL find(Sg./Pl.) some student(Dat.Sg.) computers(D.Nom.Pl.) ugly
'Some student finds the computers to be ugly.'
- b. það **finnst/finnast** mörgum stúdentum tölvurnar ljótar.
EXPL find(Sg./Pl.) many student(Dat.Pl.) computers(D.Nom.Pl.) ugly
'Many students find the computers to be ugly.'
- c. það **finnst/*finnast** mörgum stúdentum tölvann ljótar.
EXPL find(Sg./Pl.) many student(Dat.Pl.) computer(D.Nom.Sg.) ugly

the associate occupy [Spec, TP] and make way for agreement between T and the downstairs subject. On the other hand, for the other type of speakers, TEC does not involve multiple specifiers; only the expletive occupies [Spec, TP], leaving behind the associate in-situ and hence the latter intervenes between T and the nominative object.

The prediction seems to be partially borne out. First, for H. Sigurðsson, the embedded quirky subject cannot remain within the embedded clause in TEC. Rather, it has to undergo raising into the matrix clause, presumably [Spec, TP] (EXPL *það* in Icelandic has been considered to be in [Spec, CP]. See Sigurðsson (1989) for detailed discussions).

(i) Icelandic: (H. Sigurðsson p.c.)

- a. *það hefur virst **einhverjum stúdent** líka hestarnir.
EXPL have seemed some student(Dat.Sg.) to-like horses(D.Nom.Pl.)
'It seems that some student likes the horses.'
- b. það hefur **einhverjum stúdent** virst líka hestarnir.
EXPL have some student(Dat.Sg.) seemed to-like horses(D.Nom.Pl.)
'It seems that some student likes the horses.'

In Icelandic, first conjunct agreement is observed, when an associate is in-situ as shown in (iia). If the associate is moved to [Spec, TP] as in (iib), number agreement is forced and hence only plural agreement is licit.

(ii) Icelandic (H. Sigurðsson p.c.)

- a. það **?hefur/hafa** verið drepin maður og kona.
EXPL has(Sg.)/have(Pl.) been killed(Nom.Pl.Neuter) man(Nom.Sg.) and woman(Nom.Sg.)
'There have been killed a man and a woman.'
- b. það ***hefur/hafa** maður og kona verið drepin.
EXPL has(Sg.)/have(Pl.) man(Nom.Sg.) and woman(Nom.Sg.) been killed(NOM.PL.NEUTER.)
'There have been killed a man and a woman.'

H. Sigurðsson (p.c.) indicates that he finds plural agreement strongly preferred in the case of TEC in (iii). Given the facts in (ii), (iii) shows that the associate external argument is moved to [Spec, TP].

(iii) Icelandic (H. Sigurðsson p.c.)

- það **??hafa/hefur** maður og kona stundum máladh bílana rauða.
there has/have man(Nom.Sg.) and woman(Nom.Sg.) sometimes painted cars(D.Acc.Pl.) red
'A man and a woman have sometimes painted the cars red.'

A further expectation is that speakers who find intervention effects in TEC should allow partial agreement in (iii) and should also allow the word order (ia), not (ib). Whether this turns out to be true remains to be seen at this point.

‘Many students find the computer to be ugly.’

Sigurðsson (1991) convincingly demonstrates that it is impossible for the quirky dative subject to value uNumber on T. Consider (2.35). Notice that the quirky dative subject, being plural, cannot determine plural agreement on T. It should also be noted that the uGender feature cannot be valued by the quirky dative either, and hence default agreement appears.

(2.35) Icelandic: (Sigurðsson 1996, Boeckx 2000, 357)

Stelpunum var **hjálpað**/***hjálpaðir**/***hjálpuðum**.
girl(Dat.D.Pl.F) was(3Sg) helped(Dflt.)/helped(Nom.Pl.M.)/helped(Dat.Pl.M)

‘The girls were helped.’

The presence of a nominative object makes agreement possible.

(2.36) Icelandic: (Sigurðsson 1991, 334)

- a. Okkur **hafði** leiðst.
us(1Pl.Dat) had(dflt) bored
‘We had been bored.’
- b. Okkur **höfðu** leiðst strákar.
us(1Pl.Dat) had(3Pl.) bored students(D.Nom.Pl.)
‘We had been bored by the students.’

This establishes that agreement in Icelandic is nominative-controlled, as it has been observed in the literature (Sigurðsson 1991, 1996 among others).

The same phenomenon is observed with TEC with a DAT-NOM raising complement clause (2.37). Plural agreement with the lowest nominative object becomes possible when the intervening embedded quirky dative is also plural.

(2.37) Icelandic: TEC (T. Hróarsdóttir p.c.)

- a. það **virðist**/***virðast** einhverjum stúdent líka hestarnir.
EXPL seem(Dflt./Pl.) some student(Dat.Sg) to-like horses(D.Nom.Pl.)
‘It seems that some student likes the horses.’
- b. það **virðist**/***virðast** mörgum stúdentum líka hestarnir.
EXPL seem(Dflt./Pl.) many students(Dat.Pl.) to-like horses(D.Nom.Pl.)
‘It seems that many students like the horses.’
- c. það **virðist**/***virðast** mörgum stúdentum líka hestur.
EXPL seem(Dflt./Pl.) many students(Dat.Pl.) to-like horse(Nom.Sg.)
‘It seems that many students like a horse.’

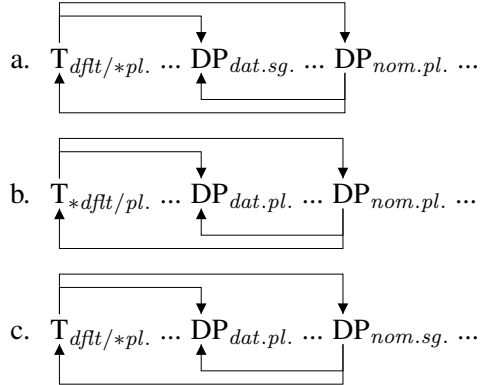
The “across-the-board” agreement pattern is not limited to TECs. The same pattern holds even if the expletive is replaced by the matrix quirky dative experiencer as in (2.38).

(2.38) Icelandic: (T. Hróarsdóttir p.c.)

- a. Mér **virðist/*virðast** einhverjum stúdent líka hestarnir.
 me(1Sg.Dat) seem(Dflt./Pl.) some student(Dat.Sg) to-like
 horses(D.Nom.Pl.)
 ‘It seems to me that some student likes the horses.’
- b. Mér **virðist/virðast** mörgum stúdentum líka hestarnir.
 me(1Sg.Dat) seem(Dflt./Pl.) many students(Dat.Pl.) to-like horses(D.Nom.Pl.)
 ‘It seems to me that many students like the horses.’
- c. Mér **virðist/*virðast** mörgum stúdentum líka hestur.
 me(1Sg.Dat) seem(Dflt./Pl.) many students(Dat.Pl.) to-like horse(Nom.Sg.)
 ‘It seems to me that many students like a horse.’

How can we make sense of these facts? The key is two kinds of Symmetry of Agree that I briefly described in Section 2.2.3; the mystery resolves once we admit a “reversed” symmetry – Centrosymmetry – for the probe-goal relation. This is more than a mere metaphor; a one-to-many relation from top-to-bottom is redefined as a one-to-many relation from bottom-to-up. Consider the point of locality evaluation below.

(2.39) The Centrosymmetry of Multiple Agree and Locality



In (2.39a), the “probe” plural number feature of the DP_{nom} cannot give a plural value to the “goal” $u\phi$ -features, because there is an intervening quirky DP_{dat} with a conflicting value (i.e. SG. vs. PL.). Hence the $u\phi$ -features of T must be valued as default. In (2.39b), on the other hand, the intervening quirky DP_{dat} has the same value and hence does not trigger intervention. Under the centrosymmetric Multiple Agree, DP_{nom} ’s number feature [+PL.] establishes Multiple Agree with DP_{dat} . Since DP_{dat} also has [+PL.] value, no locality problem occurs and DP_{nom} successfully values $u\phi$ -features of T as plural. Likewise in (2.39c), the probe [+SG.] number feature is blocked by the intervening [+PL.] number feature. Thus plural agreement is blocked and default agreement obtains.

Thus across-the-board agreement follows from the centrosymmetric Multiple Agree. As we have seen, however, a sentence such as (2.34b) also allows default agreement. I argue that default agreement is a product of mirrorsymmetric Multiple Agree. Recall that the two kinds of agreement symmetry are always options in our theory. Crucially,

Consider the derivation below.

(2.40) The Mirrorsymmetry of Multiple Agree and Locality



Recall that the quirky dative cannot value $u\phi$ -features of the probe. Thus while DP_{dat} gives a default singular value, DP_{nom} gives plural value, which results in a conflict. Thus default agreement obtains.

The following example is subsumed under the same mechanism, but it is of more interest because it helps us to empirically choose between the Mirrorsymmetry and the Centrosymmetry of Agree discussed in Section 2.2.3.

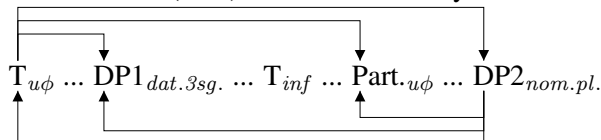
(2.41) Icelandic;

Mér **hefur**^{?*} **hafa** alltaf virst honum hafa verið *selt/^{o.k.} seldar þessar
 1Sg.(Dat) has/have often seemed 3Sg.(Dat) have been sold(Sg./Pl.) these
 bækur á alltof fár verði.
 books(Nom.Pl.) at far-too high price

‘It has often seemed to me that he has been sold these books at far too high a price.’
 (Schütze 1997)

Consider the stage of locality evaluation at TRANSFER. Note that the sentence has no phase boundary and hence the domain on which the C-T probe operates under the PTPD is the whole sentence.

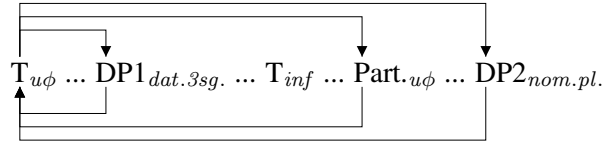
(2.42) Derivation of (2.41) under the Centrosymmetric Multiple Agree



At TRANSFER, locality of ϕ -agreement is evaluated, where the probe is the ϕ -features (number) of the bottom $DP2$ and the goals are $u\phi$ -features of $Part.$ and T . The first goal that the probe encounters is $u\phi$ of $Part.$ Since the relation is local, the latter is valued as plural. The next goal that the probe finds is ϕ of $DP1$, whose number feature is intrinsically valued as singular. Thus the plural agreement cannot extend beyond this intervenor and hence the matrix T is valued as default. The bottom-up directionality of ϕ -agreement just follows from the centrosymmetric theory of Multiple Agree.

The state of affairs, in contrast, cannot be explained if Multiple Agree is restricted to a mirrorsymmetric relation. To see this, consider the relevant stage of derivation below.

(2.43) Derivation of (2.41) under the Mirrorsymmetric Multiple Agree



Now, everything being equal, there is no way for the participle to get a plural value from the DP2_{nom.pl.} since they are not in a probe-goal relation. One might say that the uNumber feature can be valued by T, but T in this sentence cannot get a plural value and hence is realized default. Therefore, there is no way for T to value the uNumber feature of the Part. as plural even in an indirect/transitive way. The mirrorsymmetric theory of Multiple Agree, thus, cannot explain the facts.

It should be clarified here once again that feature value conflict does not prevent Multiple Agree. Rather, Multiple Agree itself is automatic as long as feature matching (see Rizzi 2004) (not feature value matching) is satisfied. What value a probe gets from multiple goals depends on the kind of symmetry that is attested and the goals' actual values.

2.4.2 A-Movement and Agreement

Under usual circumstances, agreement is local —local in the sense that it does not allow an intervenor between a probe and a goal. Compare (2.44). In each example, the intervening quirky element has been A-moved to [Spec, TP] and the probe T agrees with the nominative element downstairs, manifesting plural number agreement. These facts show that A-movement bleeds intervention. Putting it another way, an copy of A-movement is invisible for Agree (Inactive Trace Invisibility in Chomsky 2001) (See Sigurðsson 1996, 2000 and Boeckx 2000 for a detailed study on Icelandic agreement). Note that agreement in these examples are forced and default agreement is not possible.¹⁹

¹⁹The downstairs nominative element, if definite, must be “shifted” to the edge of vP. This can be shown by the negative adverb *ekki*. Note that this movement conforms to the general constraint of Holmberg’s Generalization (Holmberg 1986, 1999). That is, when V-to-T of the main verb is blocked, the shifting of the downstairs nominative element is also blocked, even if it is definite.

(i) Icelandic:

- a. Mér **virðist**/*?**virðast** (*ekki) Jóni (ekki) líka hestarnir.
 1Sg.(Dat) seem(Dflt./Pl.) (Neg) John(Dat) (Neg) to-like horses(D.Nom.Pl.)
 ‘It does not seem to me that John like the horses.’
- b. Mér **hefur**?***hafa** (*Jóni) ekki virðist Jóni líka hestarnir.
 1Sg.(Dat) has/have (John(Dat)) Neg seem John(Dat) to-like horses(Nom.Pl.)
 ‘It does not seem to me that John like the horses.’

(2.44) Icelandic:

- a. Henni ^{??/*}**leiddist/leiddust** strárnir.
her(D) bored(Dflt.)/bored(3Pl.) boys(Nom.D.Pl.)
'She found the boys boring.'
- b. Henni ^{*?}**mistókst/mistóust** allar tilraunirnar.
her(3Sg.Dat) failed(Dflt.)/failed(3Pl.) all attempt(Nom.Pl.D)
'She failed in all the attempts.' (Sigurðsson 1996, 26)

The same point is strengthened by the following examples in (2.45), which involve raising infinitives. Again, A-movement of the quirky dative elements makes number agreement with the downstairs nominative objects possible. But these examples differ from (2.44) in that number agreement is only optional.

(2.45) Icelandic:

- a. Honum **eru** taldir hafa verið **gefnir** **peningarnir**.
3Sg.(Dat) are(Pl.) thought to-have been given(Nom.M.Pl.) money(Nom.M.Pl.)
'The money is thought to have been given to him.' (Boeckx 2000, 359)
- b. Jóni **virðist**/^(?)**virðast** t_{Jóni} líka **hestarnir**.
John(Dat) seem(Dflt./Pl.) to-like horses(D.Nom.Pl.)
'John seems to like the horses.' (Hiraiwa (2002d))
- c. Mér **finnst/finnast tölvurnar** ljótar.
1Sg.(Dat) find(Sg./Pl.) computers(D.Nom) ugly(Nom)
'I find the computers ugly.' (Holmberg and Hróarsdóttir 2003)
- d. Einhverjum stúdent **finnst/finnast tölvurnar** ljótar.
some student(Dat.Sg) find(Sg/Pl.) computers(Nom.D.Pl.) ugly
'Some student finds the computers to be ugly.'

In (2.46), on the other hand, plural agreement is blocked as shown in the preceding section; this is because whereas the highest intervening quirky element has been dislocated to [Spec, TP], the downstairs intervening quirky element is still in the domain of the probe T (see Watanabe 1993, Sigurðsson 1996, Schütze 1997, Boeckx 2000).

(2.46) Icelandic:

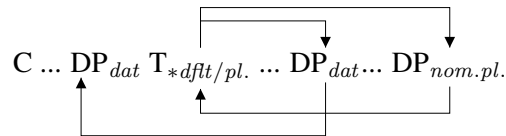
- Mér **virðist**/^{*?}**virðast** Jóni líka hestarnir.
1Sg.(Dat) seem(Dflt./Pl.) John(Dat) to-like horses(D.Nom.Pl.)
'It seems to me that John likes the horses.' (Boeckx 2000)

(2.47) A-movement bleeds intervention.

The derivation receives a natural explication under the PTPD. Once C_ϕ is Merged, the probe ϕ -features probe and Agree with the quirky dative as well as the object DP via Multiple Agree.

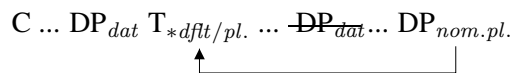
This results in valuation of nominative Case on the quirky element and the object DP, while the nominative Case is not morphologically realized on the quirky element (see Boeckx 2000, Chomsky 2001). Note that although (2.48) has been described as if there is an ordering between the two operations Agree and Merge, they are taking place derivationally simultaneously conforming to the PTPD. Merge (T, DP_{dat}) results in a unification of the occurrences of the goal since the chain is uniform.

(2.48) The Derivation of (2.45) under the PTPD



Now at TRANSFER, locality is evaluated. The representation of chains at TRANSFER is as follows.

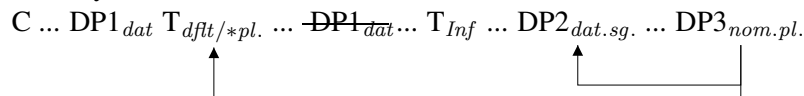
(2.49) Locality Evaluation at TRANSFER



Since the A-movement of the quirky element does not leave a copy in [Spec, v^*P], there is nothing that intervenes between T and the downstairs nominative object.

This contrasts with (2.46). T Agrees with three goals, two quirky datives and the object DP by Multiple Agree, valuing the nominative Case on the latter. Now consider the representation at TRANSFER.

(2.50) Locality Evaluation at TRANSFER



DP1 no longer intervenes, due to the Chain Uniformity Principle, but the DP2 does. The probe plural number feature of DP3 tries to Agree with the DP2 in vain (because of the feature value mismatch) and hence the plural agreement between DP3 and T is prohibited, leading to the default valuation.

2.4.3 \bar{A} -Movement and Agreement

It is a remarkable discovery, made independently in Holmberg and Hróarsdóttir (2002, 2003, 2004) and Hiraiwa (2002d), that \bar{A} -movement interacts with agreement phenomena in a rather unexpected way —unexpected at least under standard assumptions. The facts come in two kinds, which I illustrate one by one.

Hiraiwa (2002d) observes that \bar{A} -movement does not rescue otherwise lethal intervention. Compare the minimal doublet below.

(2.51) Icelandic:

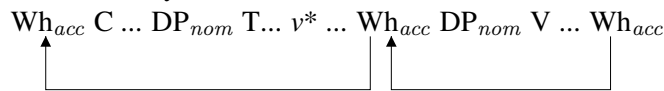
- a. Mér **virðist/*?virðast** Jóni líka hestarnir.
 1Sg.(Dat) seem(Dflt./Pl.) John(Dat) to-like horses(D.Nom.Pl.)
 ‘It seems to me that John like the horses.’
- b. Hvaða stúdent **virðist/*?virðast** Ólafur líka hestarnir.
 which student(Dat.Sg.) seem(Dflt./Pl.) Olaf(Dat) to-like horses(D.Nom.Pl.)
 ‘Which student does it seem to Olaf likes the horses?’ (Hiraiwa 2002d)

In (2.51a), the plural agreement is blocked because the quirky element *Jóni* intervenes between T and the downstairs object *hestarnir*. In (2.51b), the matrix experiencer *Ólafur* occupies [Spec, TP] and the embedded dative *Wh*-subject has been extracted to [Spec, CP]. If we adopt a BEA version of phase evaluation of locality, *Wh*-movement of this intervenor should make its way for Agree (T, DP_{hestarnir}), which is disproved in (2.51b).

This is empirically inconsistent with the fact that motivated Chomsky (2001) to adopt the phase-evaluation theory of locality. In (2.52), for example, the *Wh*-element stops at the edge of *v**P on its way to [Spec, CP] and does not block agreement between T and the subject.

(2.52) Icelandic:

(2.53) Successive Cyclic *Wh*-movement and Intervention



Based on this fact that is cross-linguistically true, Chomsky (2001, 2004) propose to evaluate locality acyclically at a phase-level. This, however, gives us the right result for (2.52) but not for (2.51b). Intervention in (2.51b) does not involve any visible intervention. Even if an intervenor is dislocated and leaves no visible copy at an intervening position, intervention effects are alive.

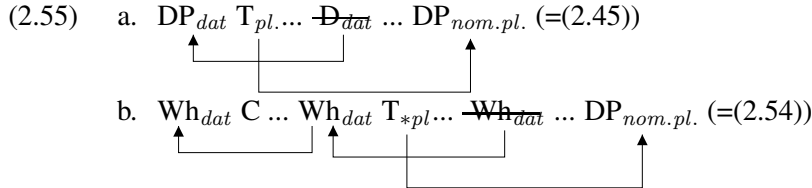
Holmberg and Hróarsdóttir (2002, 2003) make an even more interesting observation. As shown below, *Wh*-movement “revives” intervention effects that should be otherwise obviated by A-movement (2.54a). The same point is also shown by (2.54b).

(2.54) Icelandic:

- a. Hvaða stúdent **finnst/*?finnast** tölvurnar ljótar.
 which student(Dat.Sg.) find(Sg./Pl.) computers(D.Nom) ugly(Nom)
 ‘Which student finds the computers to be ugly?’ (Holmberg and Hróarsdóttir 2002, 2003)
- b. Hvaða stúdent **virðist/*?virðast** líka hestarnir.
 which student(Dat.Sg.) seem(Dflt./Pl.) to-like horses(D.Nom.Pl.)
 ‘Which student seems to like the horses?’ (T. Hróarsdóttir p.c.)

As we saw in the preceding section, A-movement rescues intervention as in (2.55a). But if \bar{A} -movement follows A-movement as in (2.55b), intervention effects should not appear and number

agreement shouldn't be blocked. This is quite surprising given the standard view of syntactic derivation that proceeds cyclically. The derivations of (2.55a) and (2.55b) are locally indistinguishable at the point of the derivation where the quirky dative experiencer undergoes A-movement to [Spec, TP].



Thus Holmberg and Hróarsdóttir (2002, 2003) suggest that *Wh*-movement applies directly to the quirky *Wh*-element in [Spec, v^*P], leaving *T*'s EPP unsatisfied. Whereas that could solve the agreement paradox at hand, it creates another fundamental problem that remains unanswered: Why and how could *T*'s EPP be obviated? One might wonder if there is a general reason –whatever it may be– why *Wh*-elements are unable to undergo A-movement, as Holmberg and Hróarsdóttir (2003) propose. That this is not correct is indicated by the following examples. Although multiple *Wh*-questions are not perfectly felicitous when the *Wh*-elements are not clause-mates, the sentences below are almost grammatical. Note that the embedded *Wh*-subject does precede the verb, indicating it has undergone A-movement to [Spec, TP].²⁰

²⁰Norvin Richards (p.c.) has reminded me of Brandi and Cordin (1989), who argue that in Northern Italian dialects, Fiorentino and Trentino, *Wh*-extraction behaves as if it occurred directly from post-verbal positions (see also Rizzi (1982) for Italian). As shown in (i), the postverbal subjects in these dialects do not control number agreement. Interestingly, in *Wh*-movement, the extracted subjects do not control number agreement.

- (i) Brandi and Cordin (1989)
- a. Fiorentino
Gli ha telefonato delle ragazze.
3M.Sg. has telephoned some girls
'Some girls have telephoned.'
- b. Trentino
Ha telefoná qualche putela.
has telephoned some girls
'Some girls have telephoned.'
- (ii) a. Fiorentino
Quante ragazze gli è venuto con te?
how.many girls 3M.Sg. has come with you
'How many girls (it) has come with you?'
- b. Trentino
Quante putele è vegnú con ti?
how.many girls has come with you
'How many girls (it) has come with you?'

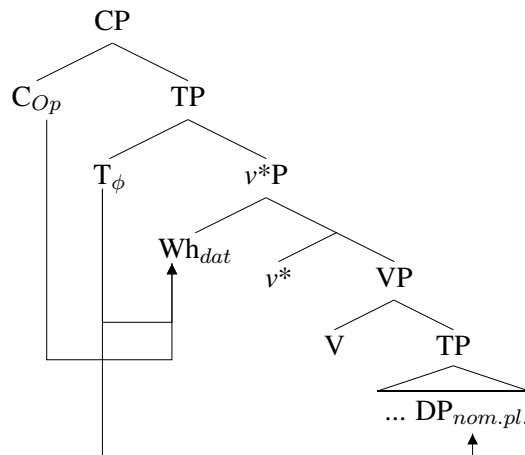
While this initially appears to support the position that *Wh*-phrases undergo *Wh*-movement directly from v^*P -internal positions, I would like to note that Arabic facts point in the opposite direction. In Standard Arabic, while post-verbal

(2.56) Icelandic: (H. Sigurðsson p.c.)

- a. ? Hver veit að hverjir fara á morgun?
 who knows C who(Pl.) leave(3Pl.) in tomorrow
 ‘Who knows that who will leave tomorrow?’
- b. ? Hver veit að hver fer á morgun?
 who knows C who(Sg.) leaves(3Sg.) in tomorrow
 ‘Who knows who will leave tomorrow?’

The PTPD gives a principled explanation to the paradox and the intricacies that an interplay of A-movement and \bar{A} -movement induce. Let us delineate the derivation of (2.57). Upon the External Merge of C, the ϕ -features and Op-features of C start probing simultaneously. All of these operations apply to the occurrence of Wh_{dat} that is in [Spec, v^*P] in a parallel computation. The following is the set of syntactic operations that are applied.

(2.57) Parallel Derivation of (2.54)



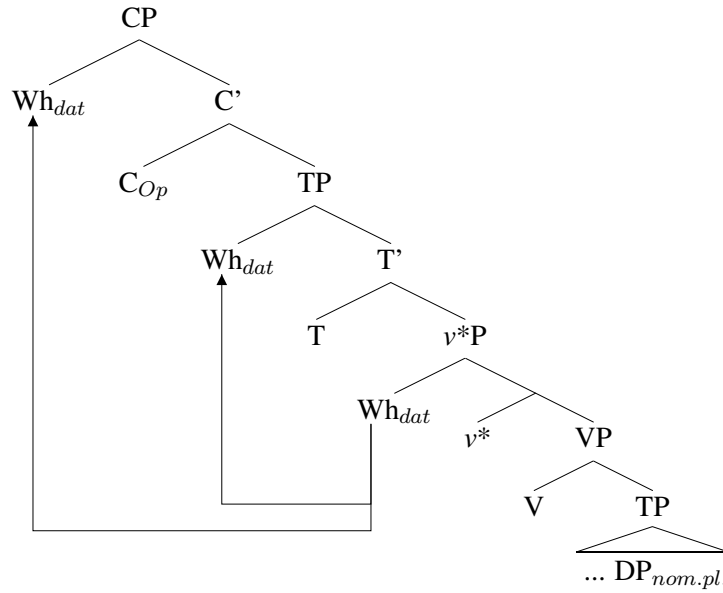
subjects trigger less rich agreement, pre-verbal subjects induce full agreement. Now if *Wh*-movement applies to the subject, the agreement always comes out fully.

(iii) Standard Arabic (Aoun et al. 1999, 680)

- a. ?ayyu ?awlaad-in naʒaʒuu.
 which.NOM children-GEN succeeded.3MP
 ‘Which children succeeded?’
- b. * ?ayyu ?awlaad-in naʒaʒa.
 which.NOM children-GEN succeeded.3MS
 ‘Which children succeeded?’

So these facts alone do not show us any convincing universal argument for or against Holmberg and Hróarsdóttir’s position. Rizzi (1982) attributes the availability of post-verbal extraction to the fact that Italian allows pro-drop and does not show any that-trace effects. Icelandic differs from Italian in that the former does not allow pro-drop, while it does not show any that-trace effects, either. I leave the issue for future research.

(2.58) Parallel Derivation of (2.54)



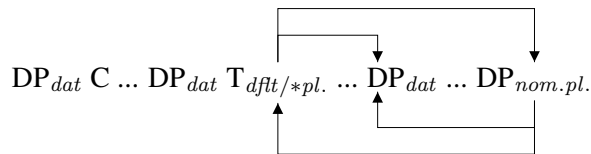
The Chain Uniformity Principle forms the following three chains.

- (2.59) a. Chain_φ: {Wh_{dat}[TP], ~~Wh_{dat}[vP]~~}
 b. Chain_{wh}: {Wh_{dat}[CP]}
 c. Chain_φ: {Wh_{dat}[vP]}

While EPP_φ results in a uniform chain and hence it does not leave a copy in [Spec, v*P], EPP_{wh}, being an operator feature, cannot form a uniform chain with the Externally Merged copy in [Spec, v*P]. Thus the chains are split into two single membered chains, one in [Spec, CP] and the other in [Spec, v*P].

Now at TRANSFER, locality is evaluated on the chains, as represented below.

(2.60) Locality Evaluation at TRANSFER



Crucially, Wh-movement leaves a copy in [Spec, v*P] that triggers intervention effects for the relation between T and DP_{nom.pl.}.²¹ Thus under the PTPD, the derivations (2.45) and (2.54) are

²¹I leave open as a terminological issue whether this is an instance of intervention or defective intervention.

locally distinct and the apparent complexity of agreement follows.^{22,23}

2.4.4 Stylistic Fronting and Agreement

Icelandic agreement exhibits a further complication. As shown below, *Wh*-movement of the intervening quirky element makes it possible for the downstairs nominative subject to move to [Spec, TP] (Holmberg and Hróarsdóttir 2002, 2003). Consider (2.61). In (2.61a), the embedded subject *Ólafur* stays within the embedded clause, which is indicated by its position below the matrix predicate. In contrast, *Ólafur* in (2.61b) has been moved to the position between the auxiliary verb and the participle. It is very important to notice that this kind of movement is not possible unless the subject position –[Spec, TP]– is a gap (Holmberg 2000). Thus, (2.61c) is ungrammatical.

(2.61) Icelandic:

- a. Hverjum hefur virst **Ólafur** vera gáfaður?
 who(Dat) has seemed Olaf(Nom) to-be intelligent
 ‘Who has found Olaf to be intelligent?’ (Holmberg and Hróarsdóttir 2003, 1009)
- b. Hverjum hefur **Ólafur** virst vera gáfaður?
 who(Dat) has Olaf(Nom) seemed to-be intelligent
 ‘Who has found Olaf to be intelligent?’ (Holmberg and Hróarsdóttir 2003, 1009)
- c. * **Ólafur** hefur virst mér vera gáfaður.
 Olaf(Nom) has seemed 1Sg.(Dat) to-be intelligent
 ‘I have found Olaf to be intelligent’

Holmberg and Hróarsdóttir (2002, 2003) ingeniously show that the movement in question is an instance of Stylistic Fronting (SF: see Jónsson 1991, Holmberg 2000, 2001 and Hrafnbjargarson 2004 and references cited therein) not A-movement/raising, by pointing out that a higher adverb blocks the movement (I will return to some remaining questions later).

²²It seems necessary under this system to think that phonological determination takes place locally phase-by-phase. Among the multiple Merge relations, the PF-interface chooses which copy to pronounce, the highest copy singled out for obvious reasons. In this respect, Stylistic Fronting is more like a PF phenomenon in that its application is determined globally; as long as PF determination vacates [Spec, TP], it can phonologically realize another occurrence in [Spec, TP]. See the next section for detailed discussions on Stylistic Fronting.

²³There is one confound, however. When the intervening quirky plural element is *Wh*-moved, plural agreement is degraded somewhat. The effect seems to be stronger when the *Wh*-movement is long-distance. I have no explanation for these facts at this point.

(i) Icelandic:

- a. Hvaða stúdentum finnst/?finnast tölvurnar ljótar.
 which students(Dat.Pl.) find(Sg./Pl.) computers(D.Nom) ugly(Nom)
 ‘Which students find computers ugly?’
- b. Hvaða stúdentum veist þú að finnst/??finnast tölvurnar ljótar.
 which students(Dat.Pl.) know you C find(Sg./Pl.) computers(D.Nom) ugly(Nom)
 ‘Which students do you know find computers ugly?’

As shown in (2.62), when the adverb *alltarf* c-commands the original position of *Ólafur*, it blocks the SF of the latter.

(2.62) Icelandic: Blocking of SF by the adverb *alltarf*

- a. * Hverjum hefur **Ólafur** **alltarf** virst vera gáfaður?
 who(Dat) has Olaf(Nom) always seemed to-be intelligent
 ‘Who has always found Olaf to be intelligent?’ (Holmberg and Hróarsdóttir 2003)
- b. Hverjum hefur **alltarf** virst **Ólafur** vera gáfaður?
 who(Dat) has always seemed Olaf(Nom) to-be intelligent
 ‘Who has always found Olaf to be intelligent?’ (Holmberg and Hróarsdóttir 2003)

I would like to add another argument here. The shifting operation in (2.61b) cannot be an instance of “object shift”, either (see Sigurðsson 2000), because in (2.61b), main verb movement is blocked by the auxiliary verb and hence the shifting operation is prevented by Holmberg’s Generalization (recall footnote 19).

Now Holmberg and Hróarsdóttir (2003) (pointed out to them by Halldor Sigurðsson), make an interesting observation in a footnote that SF feeds plural agreement in the example where otherwise plural agreement is illicit. In (2.63a), the plural agreement on T is blocked due to the intervening copy of the quirky *Wh*-phrase at the edge of *v**P. On the other hand, in (2.63b), where the embedded subject DP has been dislocated by SF, agreement becomes possible and in fact is forced.

(2.63) Icelandic:

- a. Hverjum **hefur**/***hafa** virst **strákanir** vera gáfaðir?
 who(Dat) have(Sg./Pl.) seemed boys(Nom) to-be intelligent
 ‘Who has found the boys to be intelligent?’
- b. Hverjum **hafa** **strákanir** virst _{t_{strakanir}} vera gáfaðir?
 who(Dat) have(Pl.) boys(Nom) seemed to-be intelligent
 ‘Who has found the boys to be intelligent?’ (Holmberg and Hróarsdóttir 2003, 1010)

(2.64) Stylistic Fronting (SF) feeds agreement.

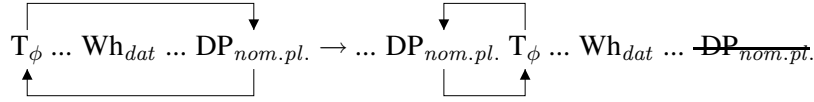
Additional examples are illustrated below.

(2.65) Icelandic: (H. Sigurðsson p.c.)

- a. Hverjum **mundi** hafa virst **hestarnir** vera seinir?
 who(Dat) would(3Sg.) have seemed horses(Pl.D.Nom) be slow
 ‘To whom do the horses seem to be slow?’
- b. Hverjum **mundu** **hestarnir** hafa virst vera seinir?
 Who(Dat) would(3Pl.) horses(Pl.D.Nom) have seemed be slow
 ‘To whom do the horses seem to be slow?’

This is unexpected, given our assumption that there is no such thing as Spec-Head Agreement. Why is number agreement possible and even forced when SF fronts the nominative element over

(2.69) Locality Evaluation at TRANSFER



There are two relations that are relevant for Agree (T , $DP_{nom.pl.}$): one between T and the tail copy of the SF-chain and the other between T and the head copy of the SF-chain. The former relation is not local because of the copy of the quirky dative Wh_{dat} left at the edge of v^*P . But in the latter, the relation is perfectly local; there is no intervenor between T and the head copy of the SF-chain. Thus number agreement becomes licit and this is why SF feeds agreement.

It should be remembered that this is not Spec-Head Agreement; as argued in Section 2.2, the role of c-command in Agree is to initiate probing and nothing more than that. Thus once Agree relation is established under c-command, the relation is retained throughout the derivation under the Conservation Law of Agree. This in fact derives some effects that have been ascribed to Spec-Head Agreement, without invoking a special mechanism. It should be noted carefully that our theory does not imply that an element externally merged to the specifier of a probe can establish an Agree relation with the probe; agreement between an element in the specifier and its head is possible only if there is a c-command relation between the head and the goal in an earlier stage of the derivation.²⁶

(2.70) Spec-Head Agreement is epiphenomenal arising from the Conservation Law of Agree.

2.4.5 Cross-Linguistic Application: Hindi Gender Agreement and Beyond

Finally, recall Hindi gender agreement, where multiple gender agreement ‘climbs up’.

(2.71) Hindi: (Boeckx 2004, 5)

- a. Shahrukh-ne tehnii kaat-**nii** chaah-**ii**.
Shahrukh-Erg branch.F cut-Inf.F want-Perf.F
‘Shahrukh wanted to cut the branch.’
- b. * Shahrukh-ne tehnii kaat-**nii** chaah-**aa**.
Shahrukh-Erg branch.F cut-Inf.F want-Perf.M
‘Shahrukh wanted to cut the branch.’
- c. * Shahrukh-ne tehnii kaat-**naa** chaah-**ii**.
Shahrukh-Erg branch.F cut-Inf.M want-Perf.F
‘Shahrukh wanted to cut the branch.’

[KH:Data of Basque agreement in (Arregi and Molina-Azaola 2004) to be added]

²⁶The approach makes a strong prediction that an element cannot agree with a probe if it is externally merged in the specifier of the probe. This clearly contrasts with a proposal made by Rezac (2003), who argues that search domain of a probe extends derivationally. In particular, he proposes that the specifier of a probe is legitimate search space, restating Spec-Head Agreement in essence. Putting aside empirical differences, our approach still conforms to the thesis that Agree is subject to c-command condition and hence a probe cannot see its specifier.

(2.72) a.

“

b.

“

It should be clear that this is exactly centrosymmetry with multiple Case valuation; the lowest $DP_{fem.}$, being a probe, enters into a Multiple Agree relation with $u\phi$ -features of the infinitive and the matrix T. The gender agreement, therefore, literally “climbs up” from bottom up (2.71a).²⁷

Bhatt (2003) demonstrates that the embedded object does not have to move out of the infinitival clause. In the following example, the embedded adverb appears at the left of the embedded object.

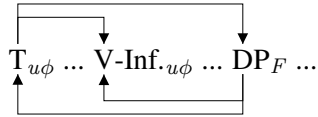
(2.73) Hindi (Bhatt 2003)

Rohan-ne aaj [**phir-se** mehnat kar-nii] chaah-ii
 Rohan-Erg today again hardwork.F do-Inf.F want-Perf.FSg

‘Today Rohan wanted to work hard again.’

The agreement pattern is represented in the diagram below.

(2.74) Hindi Gender Agreement



It is significant to note that if the embedded infinitive has an overt subject, which is genitive Case-marked in Hindi, the gender agreement is blocked.²⁸

(2.75) Hindi: (Bhatt 2003, R. Bhatt p.c., Boeckx 2004)

a. ? Firoz-ne Shabnam-kaa rotii khaa-**naa** chaah-**aa**.
 Firoz-Erg Shabnam-Gen bread.F eat-Masc. want-Perf-Masc
 ‘Firoz wanted Shabnam to eat bread.’

²⁷Boeckx (2004) notes that there is a dialect that accepts (2.71b). This micro-variation makes a perfect sense under our theory of Multiple Agree; the two dialects in question differs in whether it allows a default valuation. If it does not the gender value of the bottom DP must enter into a Multiple Agree relation with the intermediate and the matrix predicates. If it allows default valuation, on the other hand, the probe gender feature can value the closest goal, leaving the distant goal valued by default. In either case, what is crucial is the fact that (2.71c) is never allowed, which clearly violates locality under the centrosymmetric theory of Multiple Agree.

²⁸Rajesh Bhatt (p.c.) notes that there are various factors that affect the construction like (2.75a), giving “?” to this example. Sharbani Banerji (p.c.), on the other hand, disagrees with the judgment reported in Bhatt (2003) and Boeckx (2004) for (2.75a) and pointed out that (2.75a) can only be interpreted as “Firoz wanted to eat Shabnam’s bread.” He observes the intended meaning should be expressed by using a subjunctive clause.

- b. * Firoz-ne Shabnam-kaa rotii khaa-**nii** chaah-**ii**.
 Firoz-Erg Shabnam-Gen bread.F eat-F. want-Perf-F
 ‘Firoz wanted Shabnam to eat bread.’

Significantly, the intervention effects remain even if the intervening genitive subject has been dislocated by scrambling or *Wh*-movement.

(2.76) Hindi: (R. Bhatt p.c.)

- a. * Shabnam-kaa_i Firoz-ne t_i rotii khaa-**nii** chaah-**ii**.
 Shabnam-Gen Firoz-Erg bread.F eat-F. want-Perf-F
 ‘Firoz wanted Shabnam to eat bread.’
- b. * Kis-kaa_i Firoz-ne t_i rotii khaa-**nii** chaah-**ii**.
 who-Gen Firoz-Erg bread.F eat-F. want-Perf-F
 ‘Who did Firoz want to eat bread?’
- c. * Firoz-ne Kis-kaa rotii khaa-**nii** chaah-**ii**.
 Firoz-Erg who-Gen bread.F eat-F. want-Perf-F
 ‘Who did Firoz want to eat bread?’

Again, this is exactly what the PTPD and the theory of chain predict; since *Wh*-movement and the long-distance scrambling in Hindi are both \bar{A} -movement, they leave a copy of the moved element in its original position, which at TRANSFER still counts as an intervenor for the evaluation of the relevant Agree relations.²⁹

In the same vein, interesting agreement constraints in English reported in Boeckx (2004) exhibit a striking similarity with Icelandic and Hindi agreement. Consider the quartet below (2.77d) is supplemented by K.H.), even though judgments of native speakers vary.

²⁹There is one confound, however. Consider below.

- (i) Hindi: (Bhatt 2003)
- a. Rahul kitaab parh-**taa** **thaa**.
 Rahul-Nom book.F read-Hab.M.Sg. be.Pst.M.Sg.
 ‘Rahul used to read the book.’
- b. Rahul-ne parhii-**thii** kitaab **thii**.
 Rahul-Erg book.F read-Perf.F be.Pst.F.Sg.
 ‘Rahul had read the book.’
- (ii) Hindi: (R. Bhatt and S. Banerji p.c.)
- a. kaun kitaab parh-**taa** **thaa**?
 who-Nom book.F read-Hab.M.Sg. be.Pst.M.Sg.
 ‘Who used to read the book?’
- b. kisne parhii-**thii** kitaab **thii**?
 who-Erg book.F read-Perf.F be.Pst.F.Sg.
 ‘Who had read the book?’

As shown above, even if the ergative subject is *Wh*-moved, the agreement is not blocked between the nominative object and the verb. This contrasts with Icelandic and merits a further investigation in the future and could raise a possibility that gender agreement in Hindi occurs lower than we think (perhaps between v^* and a nominative object).

(2.77) English Number Agreement and Intervention (Boeckx (1999))

- a. There seems_{dflt}/*seem_{pl.} to Mary to be a man in the room.
- b. There seems_{dflt}?/*seem_{pl.} to Mary to be men in the room.
- c. There seems_{dflt}/*seem_{pl.} to the women to be a man in the room.
- d. There seems_{dflt}/seem_{pl.} to the women to be men in the room.

As (2.77c) shows, the dative in English cannot value the number value of T by itself. Also, in all the cases, default agreement is possible. When the number values of the intervening dative and the associate are different, only default agreement is allowed as in (2.77b). When their number values are same, the intervention effect disappears as grammaticality of plural agreement in (2.77d) shows. The facts are parallel to Icelandic agreements (2.34); under Multiple Agree, the ϕ -features of the bottom DP probes; if it finds a goal with a different value, agreement halts and default valuation is called for. If, on the other hand, it encounters a goal with a same value, it goes on (i.e. Multiple Agree). Then it reaches the matrix T and successfully values plural agreement on it.

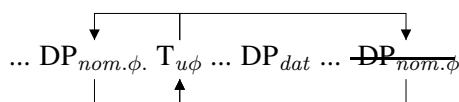
Now the Symmetry Principle of Agree has a further implication here. Once the associate DP is raised over the experiencer, intervention effects disappear.

(2.78) English Number Agreement

- a. A man seems_{dflt}/*seem_{pl.} to Mary to be in the room.
- b. Men *seems_{dflt}/seem_{pl.} to Mary to be men in the room.
- c. A man seems_{dflt}/*seem_{pl.} to the women to be a man in the room.
- d. Men *seems_{dflt}/seem_{pl.} to the women to be men in the room.

Again, Merge yields symmetric Agree relations, the only difference being that this Merge is A-movement and hence does not leave a copy, compared with SF in Icelandic discussed above.

(2.79) Locality Evaluation at TRANSFER



The Agree relation between T and the nominative DP is local after Merge, though not before Merge. Thus number agreement obtains unambiguously.³⁰

³⁰The same line of reasoning will probably apply to French participle agreement as well (see Kayne (1989, 2000)).

(i) French: (Boeckx 2004)

- a. Jean a vu-*e la fille.
Jean has seen-Fem D girl
'Jean saw the girl.'
- b. Quelle fille Jean a(-t-il) vu-e?
which girl Jean has-he seen-Fem
'Which girl did Jean see?'
- c. Cette fille a été vu-e.
this girl has been seen-Fem

2.5 Multiple Agreement

The preceding discussions have focused on cases where agreement is determined on a single element by multiple goals. In this section, I would like to consider cases where agreement appears on more than one element while there is only one goal. Examples are taken from Icelandic and Swahili.

2.5.1 Raising-to-Object/ECM in Icelandic

First, let us examine the derivation of Raising-to-Object/ECM constructions in Icelandic (Jonas 1996, Maling and Sprouse 1995, Taraldsen 1995, Thráinsson 2001 among others). A particular focus is placed on Case assignment to the participle and the DP within the embedded infinitive. A simple case of ECM in Icelandic is illustrated below. Note that the embedded subject *Harald* receives an accusative Case.

(2.80) Icelandic: (Thráinsson 2001, 176)

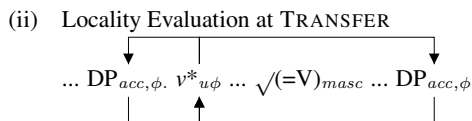
Ég taldi **Harald** vera latan.
1Sg. believed Harald(Acc) to-be lazy

‘I believed Harald to be lazy.’

In ECM in Icelandic (2.81), the participle *drepinn* and the embedded subject *einhvern* both receive accusative Case value, as shown below.

‘This girl was seen.’

Suppose that the verbal root category (or alternatively, the participle head Part.) in French has a masculine specification. Without movement of the object to the edge of v^*P , the root intervenes and blocks feminine gender agreement between DP and v^* . Once dislocated, however, the Agree relation between DP and v^* becomes local and hence the participle agreement in gender is rendered licit.



Furthermore, a copy of the moved DP is not left behind in the case of A-movement (ia), whereas a copy is left behind in the case of \bar{A} -movement (ib) and (ic). This explains why past participle agreement in French is obligatory with A-movement contexts, while it is optional in other contexts. With A-movement, the head of the A-chain is local by the Conservation Law of Agree, while with \bar{A} -movement, the chain is split into two single-membered chains, one in [Spec, CP] and the other in the original position. Depending on which copy is used for locality evaluation, optionality is expected.

The same analysis, I believe, will extend to conjunct agreement and agreement in compound tense constructions in Bantu and varieties of Arabic, but I will not discuss them here further due to the limit of space

- (2.81) Icelandic: (H. Sigurðsson p.c.; Frampton and Gutmann 2001, Chomsky 2001, 2004)

Ólafur hefur lílega tali **einhvern** hafa veri
 Olaf(Nom) has(3Sg.) probably believed someone(Acc.M.Sg.) have been
drepinn.
 killed(Acc.M.Sg.)

‘Olaf has probably believed someone to have been killed.’

The participle also inflects for number and gender and their values are assigned from the embedded object DP. In (2.82), the participle agrees with the derived subject DP in number and gender.

- (2.82) Icelandic: (H. Sigurðsson p.c.)

- a. Ólafur telur **einhvern** hafa veri **drepinn**.
 Olaf believe(3Sg.) someone(Acc.M.Sg.) to-have been killed(Acc.M.Sg.)
 ‘Olaf believes someone to have been killed.’
- b. Ólafur telur **Mari** hafa veri **drepna**.
 Olaf believe(3Sg.) Mari(Acc.Fm.Sg.) to-have been killed(Acc.Fm.Sg.)
 ‘Olaf believes Mary to have been killed.’

Clearly, the accusative Case comes from the $v^*(-\#)$ probe system since otherwise, accusative Case is not available within the embedded clause in these constructions.³¹

The following data, however, reveals a complication. The ditransitive verb “give” in Icelandic allows two passivization patterns: either the direct object is passivized or the indirect object is passivized. Significantly, under ECM, Case valuation patterns show up in a different way. When the passivized direct object DP is embedded under ECM as in (2.83a), the passivized direct object as well as the participle get an accusative value. If the passivized indirect dative DP is embedded under ECM as in (2.83b), however, the in-situ direct object and the participle cannot get accusative Case value and rather, they appear in nominative Case (Sigurðsson 1993, 2000).

- (2.83) Icelandic: (Maling and Sprouse 1995, 180)

- a. Ég taldi **hestana** hafa verið **gefna** Jóni.
 I believed horses(D.Acc) to-have been given(Acc.Pl.Msc) John(Dat)
 ‘I believed the horses to have been given to John.’
- b. Ég taldi **Jóni** hafa verið **gefnir** **hestanir/*gefna**
 I believed John(Dat) to-have been given(Nom) horses(D.Nom)/given(Acc)
hestana.
 horses(D.Acc)
 ‘I believed the horses to have been given to John.’

The same pattern is observed in other Dative-Nominative constructions. In (2.84), the “nominative” object cannot get accusative Case from $v^*(-\#)$ (see Sigurðsson (1989, 2006) for the observation).

³¹I will return to the $v^*(-\#)$ relation in Chapter 1. Since it is irrelevant for the discussions here, I will not go into details here.

(2.84) Icelandic: (Maling and Sprouse 1995, 178)

Ég taldi henni leiðast **Hraldur/*Harald**.
 1Sg. believed her(Dat) to-bore Harald(Nom)/Harald(Acc)

‘I believed her to be bored by Harald.’

It is not the case that v^* -T cannot look into the complement domain of the embedded predicate. If we control specificity/definiteness of the object, it is possible to leave it in-situ. Note that Case valuation patterns do not change here.

(2.85) Icelandic: (H. Sigurðsson p.c.)

- a. Ég tel of **marga menn** hafa verið **drepna**.
 I believe too many(Acc.M.Pl) men(Acc.M.Pl) have been killed(Acc.M.Pl)
 ‘I believe to many men have been killed.’
- b. Ég tel hafa verið **drepna** of **marga menn**.
 I believe have been killed(Acc.M.Pl) too many(Acc.M.Pl) men(Acc.M.Pl)
 ‘I believe to many men have been killed.’

The quirky dative element can be omitted when it is understood in the context. In such a case, the participle and the object DP surface in accusative Case. Compare below with (2.83). The participle and the in-situ object get accusative Case from v^* -#.

(2.86) Icelandic: (H. Sigurðsson p.c.)

Ég taldi hafa verið **gefna** of **marga hesta**.
 I believed to-have been given(Acc.M.Pl.) too many(Acc.M.Pl) horses(Acc.M.Pl.)

‘I believed there to have been given many horses’

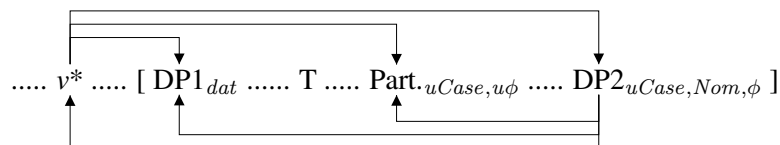
The generalization seems to be as follows: in Dative-Nominative configurations, the “nominative” object DP is quirky with uCase as well as inherent nominative case.

(2.87) In Dative-Nominative configurations:

- a. The “dative” subject DP has uCase as well as inherent dative case.
 b. The “nominative” object DP has uCase as well as inherent nominative case.

But the generalization still leaves vague the exact mechanism of Case assignment to the participle. Consider below.

(2.88) Case Assignment to the Participle



If the participle gets its Case value from v^* directly, it is expected that it gets accusative Case while the DP2, being a quirky nominative, surfaces in nominative Case. As we have seen, this is not true. Rather, the participle always gets the same Case value as the DP2. This suggests that uCase of the participle cannot be valued by v^* . Rather it is valued by the DP2: if the DP2 only has uCase, v^* assigns accusative Case to it and the DP2 in turn assigns its Case value to the participle via Value (DP, Part.). If, on the other hand, the DP2 has uCase and inherent nominative case, Value (DP, Part) gives a nominative value to uCase of the participle.

This suggests that Case valuation is contingent on matching of ϕ -features. One may assume here that $u\phi$ -features of v^* do not match with $u\phi$ -features of the participle since both of them are unvalued. Hence v^* cannot assign a value to uCase of the participle. Rather its value is assigned by the DP2 under the centrosymmetry of Multiple Agree. Since inherent ϕ -features of the DP2 match with $u\phi$ -features of the participle, the former act as a probe and the latter act as a goal. Hence the Case value is assigned from the DP2 to the participle.

2.5.2 Compound Tense Constructions in Swahili

Carstens (2000, 2001) points out another potential problem of the probe-goal system of Chomsky (2000, 2001). She discusses cases where multiple probes c-command a goal and the former agree with the latter. I focus here on Compound Tense Constructions.³² Bantu has constructions called *Compound Tense Constructions*, where tense is expressed on multiple (consecutive) heads and ϕ -agreement appears on each head (see Kinyalolo 1991 and in particular Carstens 2000). The hypothesis that ϕ -features are a property of C transmitted down to T and under Multiple Select may explain why agreement appears successive-cyclically in the following compound tense constructions. Some examples are cited from Swahili and Kilega.

(2.89) Swahili: (Carstens 2000)

- a. Juma a-li-kuwa a-me-pika chakula.
Juma 3Sg.-Pst-be 3Sg.-Perf-cook 7food
'Juma had cooked food.'
- b. (Mimi) Ni-li-kuwa ni-ngali ni-ki-fanya kazi.
(1Sg.) 1Sg.-Pst-be 1Sg.-still 1Sg.-Perf-do 9work
'I was still working.'

(2.90) Kilega:

- a. Juma a-li-kuwa a-me-pika chakula.
Juma 3Sg-PST-be 3Sg-PERF-cook 7.food
'Juma had cooked food.' (Carstens 2001)
- b. Masungá má-kilí m-á-yik-u-á.
6.yam 6.Sa.-be.still 6.Sa-A-cook-Pass-FV

³²Carstens (2000, 2001) also discusses "concord" phenomena within noun phrases in French and Bantu languages. Since discussing those phenomena requires a careful examination of the structure of DP and more importantly, the distribution of ϕ -features, I will not discuss them here. See Carstens (2001) for detailed discussions.

‘The yams are still being cooked.’ (Carstens 2004)

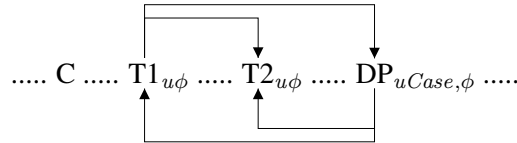
- c. Ku-Lúgushwá kí-kili ku-á-twag-a nzogu maswá.
 17-Lugushwa 17.Sa-be.still 17.Sa-A-stampede-FV 10.elephant 6.farm

‘At Lugushwa are elephants still stampeding over (the) farms.’ (Carstens 2004)

Note the multiple agreement morphemes on each head. Carstens (2000) correctly points out that if Case assignment is a function of full ϕ -agreement (i.e. ϕ -completeness) as argued in Chomsky (2000), the multiple occurrences of full agreement with a goal within a single sentence are mysterious, because the goal should get inactivated once its uCase is valued by Agree with the first (i.e. closer) probe.

It is worth pointing out here that the PTPD resolves the problem naturally. Consider the derivation below.

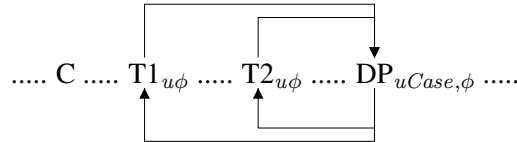
(2.91) Multiple Agreement in CT



Under the PTPD, Multiple Agree depicted above takes place simultaneously. Thus the valuation of $u\phi$ -features on T1 and T2 occurs at the same time as the valuation of uCase of the goal. Thus, no “ ϕ -completeness” paradox arises.

There is another conceivable derivation, however, in which both T1 and T2 act as probes for the goal. This is many-to-one relation, in contrast with the one-to-many relation discussed in detail above so far.

(2.92) Multiple Agreement in CT



Again, no timing problem arises for Case valuation under the PTPD because the probes access the single goal simultaneously in a parallel computation.

In the next section, I take a closer look at other cases where in fact multiple probes are involved.

2.6 Multiple Probes: Optional Agreement and Person Case Constraints

In this section, I deal with two issues that I have deferred so far: optionality of agreement and the Person-Case Constraints. The core of the proposal is a one-to-many selectional relation between C and multiple Ts.

2.6.1 Optionality of Agreement

There is a strong tendency for number agreement to be forced in a local domain (i.e. in a non-raising context), while it becomes optional –“one-notch weaker”–in a raising context (see Sigurðsson 1996 for a detailed survey). Consider (2.93), where plural agreement is strongly preferred within a single clause.

(2.93) Icelandic:

- a. Henni ^{??/*}**leiddist/leiddust** strárnir.
her(D) bored(Dflt.)/bored(3Pl.) boys(Nom.D.Pl.)
‘She found the boys boring.’ (Sigurðsson 1996, Boeckx 2000)
- b. Henni ^{??}**mistókst/mistóust** allar tilraunirnar.
her(3Sg.Dat) failed(Dflt.)/failed(3Pl.) all attempt(Nom.D.Pl.)
‘She failed in all the attempts.’ (Sigurðsson 1996, 26)

Compare (2.93) with long-distance agreement (2.94), where agreement is only optional.

(2.94) Icelandic:

- a. Mér **virðist/virðust** þær vinna vel.
me(1Sg.Dat) seem(Dflt.)/seem(Pl.) they(3Pl.Nom) to-work well
‘It seems to me that they work well.’ (Sigurðsson 1996, 30; also Sigurðsson 1989)
- b. Jóni **virðist**/^(?)**virðast** t_{Jóni} líka hestarnir.
John(Dat) seem(Dflt.)/seem(Pl.) to-like horses(D.Nom.Pl.)
‘John seems to like the horses.’ (Hiraiwa 2002d)

In the optional agreement cases above, the matrix T enters an Agree relation with an element that starts out within the embedded clause. The question is how to deal with such optionality within the framework of the Minimalist Program.

I propose that the optionality is due to two potential derivations available for the long-distance agreement sentences. More specifically, I argue, extending the “one-to-many relation” thesis to Selection, that C can enter into a multiple selection relation with the matrix T₁ and the embedded T₂.

(2.95) Multiple Select by C

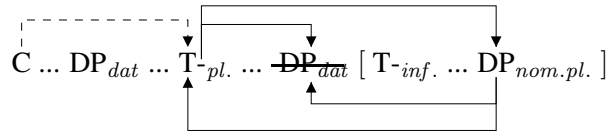
C enters into a Multiple “Agree” –Select– relation with T₁ and T₂.

Given our theory that T functions as a probe in conjunction with C, it follows from (2.95) that the derivation of raising examples contain more than one probe.³³

- (2.96) a. Probe 1: C-T₁
- b. Probe 2: C-T₂

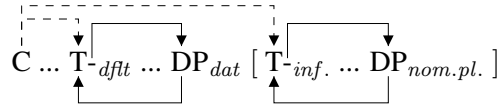
We have two derivations for raising constructions and hence agreement becomes “weaker” – optional– (Sigurðsson 1996. Boeckx 2000). Consider the derivation of (2.93) in which only a single selection by C takes place.

³³This explains why we get EPP on each intermediate infinitival T in raising constructions.

(2.97) Agreement under Single Select (C, T_1) and Multiple Agree ($C-T_1, DP_{dat}, DP_{nom}$)

The dotted line indicates a selectional relation between C and T_1 . Since C does not select T_2 in this derivation, $C-T_2$ cannot act as a probe. Hence, $C-T_1$ Agrees with multiple goals: Agree ($C-T_1, DP_{dat}, DP_{nom}$). In this derivation, DP_{nom} necessarily values $u\phi$ -features of the probe $C-T_1$ and hence plural agreement is realized.

Compare this derivation with the derivation containing multiple selection. Here, there are two probes at the phase level (CP) and both of them probe simultaneously. Thus, $C-T_1$ Agrees with the closest DP_{dat} and $C-T_2$ Agrees with the embedded DP_{nom} . The former Agree relation necessarily results in default agreement, since DP_{dat} cannot value $u\phi$ -features. The latter Agree relation can value neither $u\phi$ -features nor $uCase$ of DP_{nom} , since $C-T_2$ is defective. Thus $uCase$ is valued by default as Nominative.

(2.98) Agreement under Multiple Select (C, T_1, T_2) and Agree ($C-T_1, DP_{dat}$) and Agree ($C-T_2, DP_{nom}$)

This explains why long-distance agreement in Icelandic shows optionality. An important consequence of this approach is that $uCase$ can be valued in two ways in Icelandic.

- (2.99) Nominative Case of nominative subjects/objects in Icelandic comes in two varieties:
 $uCase$ valued via Agree with $C-T$
 $uCase$ valued by default via Agree with $C-T$

The conclusion is empirically supported by the fact that nominative objects can also be licensed within control infinitives, as shown in (2.100).

(2.100) Icelandic:

- a. Hún vonast til [að PRO leiðast ekki **bókin**].
she(Nom) hope(Sg.) for to PRO(Dat) bore not book(D.Nom)
‘She hopes not to find the book boring.’ (Sigurðsson 1992)
- b. [að PRO batna **veikin**] er venjulegt.
to PRO recover.from disease(D.Nom) is usual
‘To recover from the disease is usual.’ (Freidin and Sprouse 1991, 409)

Sigurðsson (1991) extensively argues that Icelandic PRO has a case and licenses agreement on the predicate of the control infinitives.

(2.101) Icelandic: (Sigurðsson 1991, 336)

- a. Stelpurnar vonast til æ PRO verða aðstoðaðar.
girls(D.Nom) hope for C PRO(Nom) be aided(Pl.F.Nom)
'The girls hope to be aided.'
- b. Stelpurnar vonast til æ PRO verða hjálpað.
girls(D.Nom) hope for C PRO(Dat) be helped(Dflt)
'The girls hope to be helped.'

Here, the C-T relation within the embedded clause assigns a nominative Case value to the object (as well as a null Case to PRO).³⁴

2.6.2 Person-Case Constraint (PCC) Effects

I would like to suggest a possible extension of our theory to the so-called Person-Case Constraints first observed by Sigurðsson (1991, 1996, 2000). As a descriptive generalization, the Person-Case Constraint is summarized as follows.

(2.102) "Person-Case Constraints (PCC)"

With quirky subjects, nominative objects cannot be 1st or 2nd person.
(Sigurðsson 1991, 1996, 2000, Boeckx 2000, Schütze 2003)

The constraint is illustrated in (2.103) and (2.104). Example (2.103) shows that when the subject is quirky, the nominative object cannot be 1st person. Thus, the sentence is simply ungrammatical.

(2.103) Icelandic:

Henni *leiddumst/?*leiddust/?*leiddist við.
her(3Sg.D) bored(1Pl.)bored(3Pl.)/bored(Dflt) we(Nom.Pl.)

'She is bored with us.' (Sigurðsson 1996, 28)

The same is true of the following passive examples. The verb "show" in Icelandic allows either the indirect object or the direct object to be passivized. It should be noted, however, that the Person-

³⁴It should be noted here, however, that the control infinitives in Icelandic cannot license nominative or quirky subjects as controllers.

(i) Icelandic: (Freidin and Sprouse 1991)

- a. Barninu var hjálpað.
child(D.Dat) was helped
'The child was helped.'
- b. að PRO vera hjálpað er erfitt.
C PRO(Dat) to-be helped is difficult
'To be helped is difficult'
- c. *að Jóni vera hjálpað er erfitt.
C John(Dat) to-be helped is difficult
'For John to be helped is difficult'

This fact may indicate a possibility that the control infinitive in Icelandic must license PRO first.

Case Constraint is lifted if the direct object is passivized to be a nominative subject.

(2.104) Icelandic:

- a. * Henni **voruð** sýndir/sýndar þið.
 her(D) were(2Pl.) shown(M)/shown(F) you(Nom.Pl.)
 ‘She was shown you.’ (Sigurðsson 1996, 32)
- b. þið **voruð** sýndir/sýndar henni.
 you(Nom.Pl.) were(2Pl.) shown(M)/shown(F) her(D)
 ‘She was shown you.’ (Sigurðsson 1996, 32)

I argue that the same theory of Multiple Agree explains the Person-Case Constraints puzzle in Icelandic, with one further elaboration of the C-T theory. So far, I have assumed that all $u\phi$ -features reside in the same head as a bundle.

(2.105) All $u\phi$ -features reside in the same head.

Suppose, however, that features are distributed over C and T.

(2.106) Split- ϕ Hypothesis

$u\phi$ -features are syntactically distributed: uPerson on C and uNumber on T.³⁵³⁶

I would like to propose that the Person-Case Constraint is a constraint on value matching.

(2.107) The Person Case Constraint

Person feature values must not be in conflict under Multiple Agree.

In other words, person features crucially differ from number features in that conflicting person values lead to crash, while conflicting number values lead to default agreement.

(2.108) PCC is induced by a Person value conflict under Multiple Agree

(2.109) Person and Values

	DAT	NOM	Value of $u\phi$
Person	1/2	3	default
Person	3	3	default
Person	3	1/2	*
Person	1/2	1/2	*

Note that again by assumption, quirky elements cannot provide actual values to $u\phi$ -features of a probe. Thus suppose that they provide 3rd person value. Then, if the “nominative” object is 3rd person, there should be no person value conflict either, under the mirrorsymmetric Multiple Agree. Thus, the sentence (2.110) is fine with default agreement. No problem arises either for the combination of a 3rd person quirky dative and a 3rd person nominative object.

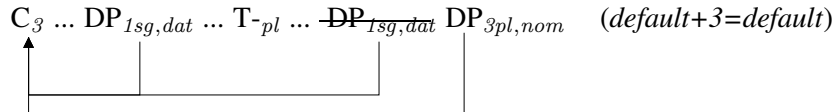
³⁵See Ritter (1991) among others for the “ ϕ -Split” in the DP domain. See Sigurðsson (1996, 2000) and Taraldsen (1995) for a proposal that person and number features are distinct projections and a different approach.

³⁶The hypothesis of scattered distribution of $u\phi$ -features might give some basis for understanding the facts: (i) that C and T must combine to probe and (ii) that T is the locus of realization of ϕ -features. (ii) is considered to be a consequence of “Agreement Attraction” by T.

(2.110) Icelandic:

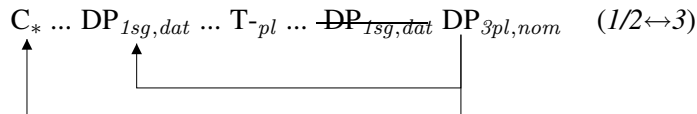
Mér **leiddust** strárnir.
 me(1Sg.D) bored(3Pl.) boys(Nom.D.Pl.)
 ‘I found the boys boring.’

(2.111) Evaluation of Person Agreement under Mirrorsymmetric Agree at TRANSFER



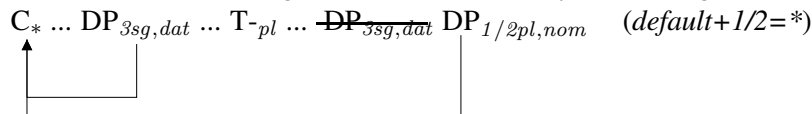
The sentence cannot converge under centrosymmetric Multiple Agree, since the 1st/2nd person value of the nominative object cannot agree with the 3rd person value of the quirky dative subject.

(2.112) Evaluation of Person Agreement under Centrosymmetric Agree at TRANSFER



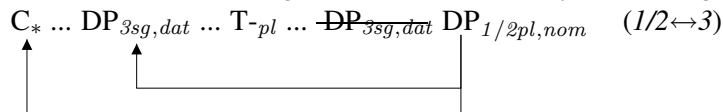
On the other hand, consider the combination of a 3rd person quirky dative and a 1st/2nd person nominative object. Under centrosymmetric Agree, DP_{Nom} enters into one-to-many relation with DP_{Dat} and T. The nominative object gives 1st/2nd person value to the probe uPerson feature, whereas the quirky dative gives a default 3rd person value irrespective of its own person feature. Hence the uPerson of C gets conflicting values from the goals and hence valuation of uPerson on C fails, resulting in ungrammaticality.

(2.113) Evaluation of Person Agreement under Mirrorsymmetric Agree at TRANSFER



(2.114) $DP_{23sg,d\at{at}} + DP_{1sg,nom} = *$ (conflict)

(2.115) Evaluation of Person Agreement under Centrosymmetric Agree at TRANSFER



Now, it is interesting to note that the Person-Case Constraint is also weaker under a raising construction. The sentence is grammatical under a default 3rd person singular agreement, when the nominative DP is an argument of the embedded clause.

(2.116) Icelandic:

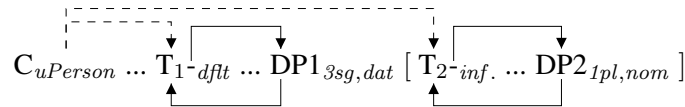
a. Henni **þótti/*þóttir** þú vera dugleg.
 her(3Sg.Dat) thought(3Sg.)/thought(2Sg.) you(2Sg.) to-be industrious
 ‘She thought that you were industrious.’ (Sigurðsson 1996, 36)

- b. þeim **hefur/*höfum/*hafa** alltaf fundist við vinna
 them(3Pl.D) has(3Sg.)/have(1Pl.)/have(3Pl.) always found we(1Pl.Nom) to-work
 vel.
 well
 ‘They have always thought that we work well.’ (Sigurðsson 1996, 30, H. Sigurðsson p.c.)

Under the assumption that $C-T_1$ is the only probe in the derivation, there are two possible derivations depending on the type of the symmetry for Multiple Agree. In either type of Multiple Agree, however, a person value conflict results in ungrammaticality. So, the absence of the Person-Case Constraint effects is a mystery.

This suggests that the matrix C-T does not multiple-agree with DP_{Dat} and DP_{Nom} . But how? Again, the key is Multiple Select (C, T_1, T_2).

(2.117) Agreement under Multiple Select (C, T_1, T_2)



- (2.118) a. $DP1_{3sg, dat} \rightarrow \text{default}$
 b. $DP2_{1pl, nom} \rightarrow \text{1person}$

In the derivation above, the multiple selection by C creates two probes: $C-T_1$ and $C-T_2$. Thus, two subderivations –Agree ($C-T_1, DP_{3sg, dat}$) and Agree ($C-T_2, DP_{1pl, nom}$)– take place simultaneously. Assuming that $uPerson$ of C is valued by the closer relation Agree ($C-T_1, DP_{3sg, dat}$), the derivation converges with default agreement. The upshot is that multiple probes split up Multiple Agree and hence the lower DP_{nom} does not enter into a direct agree relation with C’s $uPerson$, avoiding person value conflict.

(2.116b) is revealing in yet another important respect. Notice that the sentence is ungrammatical with 3rd person plural agreement. This indicates that it is impossible for $uPerson$ and $uNumber$ to be valued by different goals. That is, if default is required for $uPerson$, it is also required for $uNumber$. This again supports the view that C and T act as a unit.

Our theory further predicts that PCC effects appear whenever C-T enters into a Multiple Agree relation with a quirky dative and a nominative object, even if T is defective (i.e. infinitival). The prediction is borne out, as observed in Boeckx (2003).

(2.119) Icelandic:

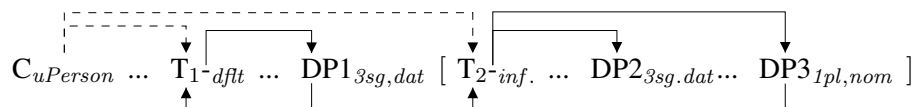
- * Jóni virtist Bjarna hafa líkað ég/við/þið.
 John(D) seemed Bjarni(D) to-have liked I(1Sg.Nom)/we(1Pl.Nom)/you(Nom)
 ‘It seemed to John that Bjarni liked me/us/you.’ (Boeckx 2003)

(2.116) differs from (2.119) in that in the former, unlike the latter, T_2 enters into a Multiple Agree relation with the embedded quirky dative as well as the nominative object, resulting in a

person value conflict.³⁷

To see this more clearly, look at (2.120). As (2.120) indicates, Agree (C-T₂, DP2, DP1), even though it does not actually value the uPerson of C, results in value conflict.

(2.120) Agreement under Multiple Select (C, T₁, T₂)



The value conflict is summarized below.

- (2.121) a. For C-T₂: DP2_{3sg.dat}+DP1_{1pl.nom}=* (conflict)
 b. For C-T₁: DP1_{3sg.dat} = default

To summarize, I have argued that the Person-Case Constraint results from a person value conflict under symmetric Multiple Agree. I argued that the locus of the uPerson feature must be higher than TP, because, unlike number agreement, quirky datives that have undergone A-movement to [Spec, TP] still intervene. Recall that for number agreement, quirky datives behave as if they were not there once they are dislocated out of the domain of T.^{38,39,40}

³⁷Of course, there is another derivation where T₁ enters into Multiple Agree with all the goals. This results in PCC effects and hence in ungrammaticality as well.

³⁸Sigurðsson (1991, 1996) and Schütze (2003) observe that there are speakers who accept 1st/2nd nominative objects with the default form of predicates. It is not clear, however, how Schütze's (2003) approach can explain the fact that (2.119) is ungrammatical, even though there is no possibility for inflection for person and number.

³⁹The following pair is of further interest. In (ib), the matrix quirky dative has been *Wh*-extracted and the embedded nominative subject DP has undergone SF. Interestingly, this feeds not only number agreement but also person agreement. Note, however, that in this example, the apparent SF crosses the matrix adverb *þá*, which should be disallowed if it is really an instance of SF. Furthermore, H. Sigurðsson (p.c.) pointed out to me that he feels some kind of focus effect on the dislocated embedded subject here (cf. Hrafnbjargarson 2004 for arguments that SF involves focus effects). I leave these issues for future investigation.

(i) Icelandic:

- a. Hverjum ***myndum/myndi** þá hafa virst **við** vera gáfuð?
 who(D) would(1Pl.)/would(3Sg) then have seemed we(1Pl.Nom) to-be intelligent
 'To whom would we then have seemed to be intelligent?' (H. Sigurðsson's letter)
 b. Hverjum myndum/***myndi** **við** þá hafa virst vera gáfuð?
 who(D) would(1Pl.)/would(3Sg) we(1Pl.Nom) then have seemed to-be intelligent
 'To whom would we then have seemed to be intelligent?' (H. Sigurðsson, letter)

⁴⁰It is important to note that no speaker, to the best of my knowledge, accepts (i) with plural agreement. This confirms our approach proposed in this chapter. In the derivation (i), irrespective of the "timing" effects, a copy of the quirky dative *Wh*-element intervenes between the matrix T and the "nominative" object.

(2.122) Icelandic:

Hvaða stúdent **finnst/finnast** tölvurnar ljótar.
 which student(Dat.Sg) find(Sg/Pl.) computers(D.Nom) ugly(Nom)

‘Which student finds the computers to be ugly?’ (contra Holmberg and Hróarsdóttir 2002, 2003)

(i) Icelandic: (=2.51b)

Hvaða stúdent virðist/*?virðast Ólafur líka hestarnir.
 which student(Dat.Sg.) seem(Dflt./Pl.) Olaf(Dat) to-like horses(D.Nom.Pl.)

‘Which student does it seem to Olaf likes the horses?’ (Hiraiwa 2002d)

2.7 Consequences of Parallel Derivation

One striking consequence of the proposed theory of Agreement is that there is *no \bar{A} -movement from a derived A-position*, namely, [Spec, TP]. This is because, as delineated in Section 2.3, both Agree and Op-movement apply to a single occurrence of each element simultaneously. We have already seen one significant and surprising consequence in Icelandic agreement, where *Wh*-movement (more precisely, an \bar{A} -Chain) blocks agreement, even though it is dislocated by A-movement to [Spec, TP].

Then it is interesting to see if empirical facts, beyond the complex agreement system in Icelandic that we have seen above support this (surprising) prediction.

2.7.1 Quantifier Float in West Ulster English

McCloskey (2000) points out some puzzling data from West Ulster English.

(2.123) West Ulster English: McCloskey's Puzzle (McCloskey 2000)

- a. ***They** were arrested **all** last night.
- b. **Who** was arrested **all** last night?
- c. * **They** were throwing stones **all** around Butchers' Gate.
- d. **Who** was throwing stones **all** around Butchers' Gate?

The puzzle here is that while A-movement in (2.123a) and (2.123c) cannot strand the quantifier in the original position, a subsequent \bar{A} -movement looks as if it licensed the otherwise illicit quantifier float in (2.123b) and (2.123d). McCloskey (2000) speculates — quite correctly, I think — that it is as if *Wh*-movement took place from the v^*P -internal position. Crucially, in the derivation (2.123d), it must be the *Wh*-movement, not the A-movement that strands the quantifier. But if *Wh*-movement applies to the occurrence of the phrase [_{DP} *who all*] in [Spec, TP], as the standard cyclicity requires, (2.123d) can never be derived since it is locally indistinguishable from the derivation (2.123c). But this solution gives rise to a serious challenge that the EPP cannot be satisfied, at least in a standard fashion. McCloskey (2000) thus contrives a mechanism by which the EPP can be suppressed in favor of avoiding an illicit movement (improper movement) in some cases.⁴¹

Under the PTPD, this seemingly paradoxical situation receives a natural explanation. For the purpose of discussion, let us adopt the following descriptive generalization as an account for the contrast between (2.123a)/(2.123c) and (2.123b)/(2.123d).

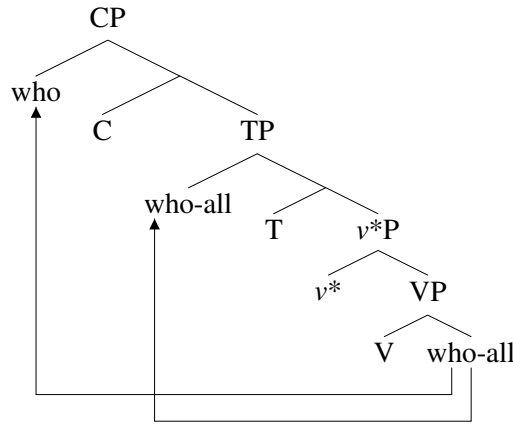
(2.124) Quantifier Float in West Ulster English

A-movement can strand a quantifier iff the host DP is at the phonological edge of the phase.

Now with (2.124) the mysterious data fall into place. By the PTPD, C and T probe simultaneously and hence T's EPP_ϕ attracts the entire DP [_{DP} *who all*] at the complement of V and C's EPP_{Op} attracts *who* of [_{DP} *who*]. The derivation is illustrated below.

⁴¹McCloskey (2000) assumes that in West Ulster English, object shift and short verb-raising are possible, which I adopt here following him. See McCloskey (2000) for discussions.

(2.125) Parallel Derivation and Quantifier Float



- (2.126) a. $\text{Chain}_{Op}: \{\text{who}_{CP}\}$
 b. $\text{Chain}_{\phi}: \{\text{who}_{v^*P}\}$
 c. $\text{Chain}_{\phi}: \{\text{who-all}_{TP}, \text{who-all}_{v^*P}\}$

The PTPD obtains the result that T's EPP is satisfied in the familiar way and, at the same time, *Wh*-movement applies to the copy in the original position, not the derived position. Thus the interplay of A-movement and \bar{A} -movement gives rise to the apparently paradoxical intricacy in quantifier float phenomena in West Ulster English.

2.7.2 ATB-Movement

One central thesis founding the PTPD is that chains must be uniform. From this a prediction is available that a kind of Multiple Merge —attraction movement of multiple elements by a single position— should exhibit uniformity effects. I argue that ATB (Across-the-Board) Movement is an instance of Multiple Merge that applies to multiple goals, attracting them simultaneously. This conclusion is also supported in the light of Ross's Coordinate Structure Constraint (CSC) that prohibits attracting only one of the elements contained in conjuncts. If they are extracted simultaneously, no CSC violation is incurred.

Recall that one-to-many or many-to-one relations are severely constrained by interface conditions, in particular by PF consideration, since syntactic outcomes of Multiple Merge are, if literally transferred, illicit PF objects that are unlinearizable. As Williams (1978, 42) clearly stated “[O]bviously sentences are not spoken in “ATB format””.

ATB-Movement is a phenomenon in which multiple elements are redefined into a single occurrence. As such, it provides us an interesting case in which Multiple Merge does not result in an illicit PF object (i.e. ternary-branching). If multiple elements are moved simultaneously by a single probe head, then, both elements are merged with the probe simultaneously, which gives rise to a ternary structure. The only way to avoid the outcome is to unify the multiple occurrences to one. This is possible since both occurrences are phonologically the same.⁴²

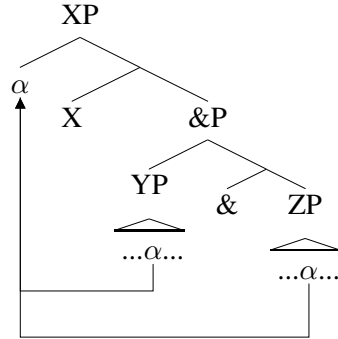
⁴²Presumably, ATB-constructions may be thought of an instance of merging of a single element into multiple positions

(2.127) (I wonder) Who t saw John and t hit Bill?



Now by the Chain Uniformity Principle (repeated here as (2.129)), it is expected that this movement “chain” must be uniform.

(2.128) ATB-Movement



(2.129) CHAIN UNIFORMITY PRINCIPLE

Suppose y has been Merged with a head h . Then:

- a. Merge (x , y) splits a chain if features of x and h are non-uniform.
- b. Merge (x , y) unifies a chain if features of x and h are uniform.

In a nutshell, ATB-movement must form a uniform chain: either it leaves copies at both positions or it does not leave copies in either position. Crucially, it cannot leave a copy in one position and not in the other.

Williams (1978) observes that ATB-Movement obeys an interesting constraint; each of the ATB-moved *Wh*-element must be the same with respect to factorization. Interestingly, under our theory, factorization is subsumed under Chain Uniformity. Consider (2.130).

- (2.130)
- a. (I wonder) Who saw John and hit Bill?
 - b. (I wonder) Who John saw and Bill hit?
 - c. (I wonder) Who hit Bill and was taken to the hospital?
 - d. *(I wonder) Who John saw and hit Bill?
 - e. *(I wonder) Who saw John and Bill hit?
 - f. *(I wonder) Who Bill hit and was taken to the hospital?

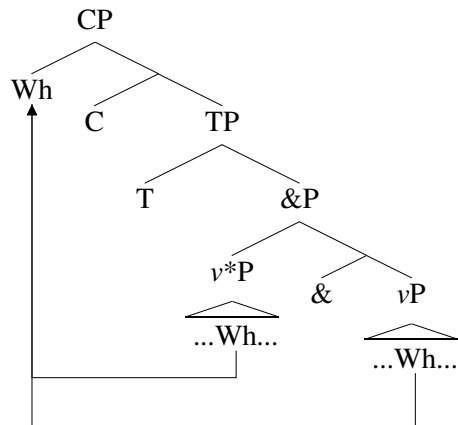
ATB movement from the local subject positions (see (2.130a)) and ATB movement from the local object positions (2.130b) are both well-formed. In the former, the ATB Chain is uniform because the operation applies to the Externally Merged occurrences (i.e. external arguments) and

(i.e. in each conjunct). If that is tenable, the multiple occurrences are not just the same phonologically but also the same in every respect. See Hiraiwa (2002a) for relevant discussion.

hence leaves a copy in each position. In the latter, the operation applies to the occurrences at the v^*P edges and hence does not have a copy in either position.

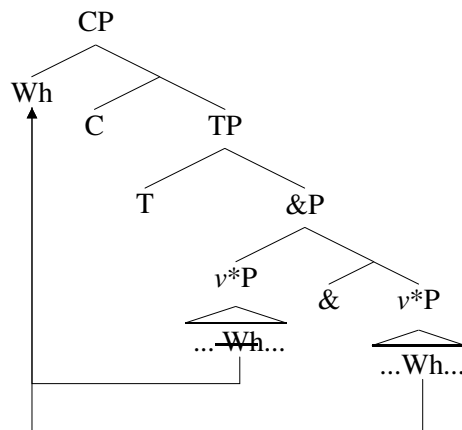
In the case of (2.130c), the chain is still homogeneous; both positions that ATB-movement applies to are External-Merged positions (subject and object positions) and hence a copy is left in each position.

(2.131) Licit ATB-Movement



On the other hand, (2.130d), (2.130e), and (2.130f) are ill-formed because the chains are heterogeneous; in (2.130d), for instance, the movement dependency between C and the first conjunct is a unified chain but the one between C and the second conjunct forms a split chain. (2.130e) is the reverse of (2.130d).

(2.132) Illicit ATB-Movement



The same account extends to the contrast (2.133). In both (2.133a) and (2.133d), at the highest CP phase-level, the ATB-movement applies to the same syntactic positions, namely, [Spec, v^*P] of the matrix clause. However, in (2.133a) and (2.133b) the chains are heterogeneous but in (2.133c) and (2.133d) the chains are homogeneous. because in the former, *who* in [Spec, v^*P] in the second

conjunct has been derived by *Wh*-movement, whereas in the latter both copies of *who* in [Spec, *v**P] have been equally derived by *Wh*-movement.⁴³

- (2.133) a. *(I wonder) Who saw John and Mary thinks that Bill hit?
 b. *(I wonder) Who saw John and Mary thinks that hit Bill?
 c. (I wonder) Who John saw and Mary thinks Bill hit?
 d. (I wonder) Who John saw and Mary thinks hit Bill?

2.7.3 Bulgarian *Russian-doll Questions*

Richards (2004a) observes an interesting case of multiple *Wh*-fronting in Bulgarian. Bulgarian, as it is well known, is a multiple *Wh*-fronting language and hence all *Wh*-phrases must undergo fronting in this language. *Wh*-phrases embedded within another *Wh*-phrases are no exception. Consider below (2.134). As (2.134a) shows, the *Wh*-phrase *po kakvo* cannot remain within the dominating *Wh*-phrase. Rather, it also must undergo fronting to [Spec, CP], evacuating the DP. Of much significance is the fact that both word orders in (2.134b) and (2.134c) are licit in Bulgarian.

- (2.134) Bulgarian: (Richards 2004a)
- a. * Kolko studenti [**po kakvo**] [ot Bulgaria] vidja?
 how-many students of what from Bulgaria you-saw
 ‘How many students of what from Bulgaria did you see?’
- b. [**po kakvo**] kolko studenti [ot Bulgaria] vidja?
 of what how-many students from Bulgaria you-saw
 ‘How many students of what from Bulgaria did you see?’
- c. kolko studenti [ot Bulgaria] [**po kakvo**] vidja?
 how-many students from Bulgaria of what you-saw
 ‘How many students of what from Bulgaria did you see?’

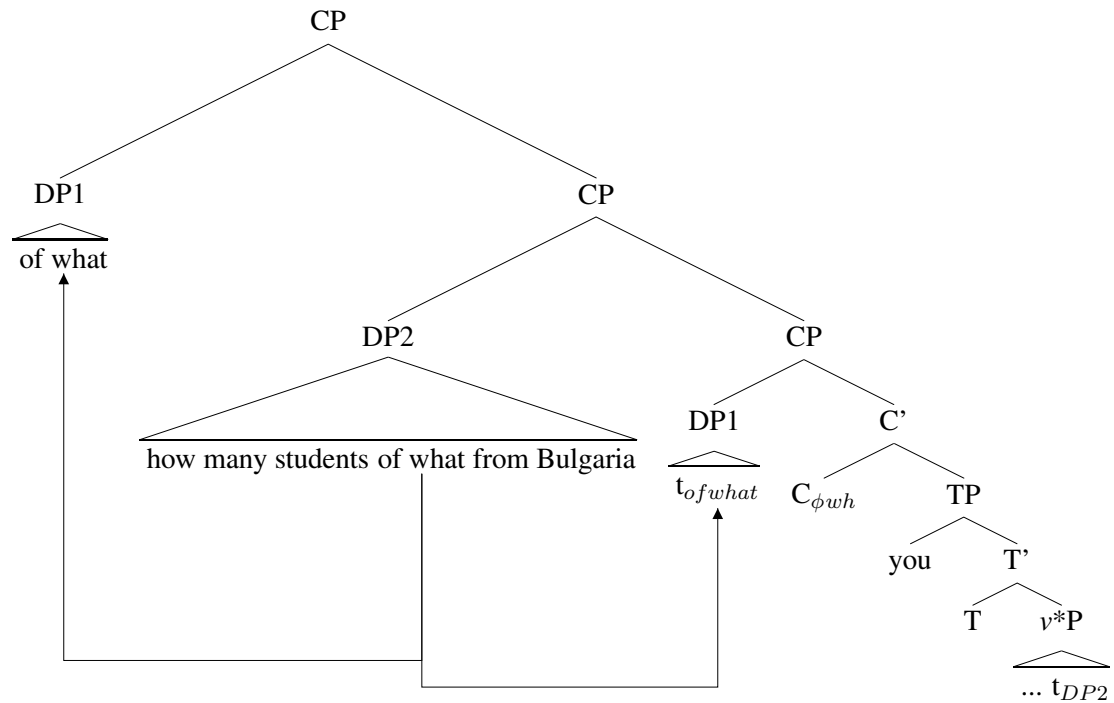
Based on these facts, Richards (2004a) argues that lowering operations should be relativized to cyclicity and that one case of lowering that is not excluded by cyclicity is the derivation (2.135) of the Russian-doll Questions.

⁴³Franks (1995) notes that the following example is ungrammatical

- (i) * the man who John saw and it was thought kissed Mary

Given that the passive *v* is not a phase head, ATB *Wh*-movement applies to *who* at the edge of *v*P in the first conjunct and *who* at the edge of CP in the second conjunct. The chains formed are uniform and hence the ungrammaticality of (i) is unexpected. I assume that an ATB operation is also subject to a structural condition that the goals must be in the same positions of the same head (i.e. the complement of \sqrt{r} , the edge of *v**P, or the edge of CP). See Kasai (2003) for a different theory of ATB-movement.

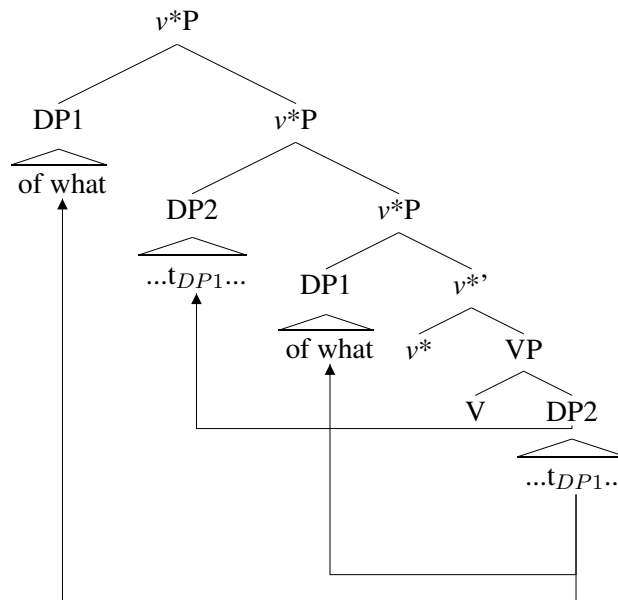
(2.135) Lowering Derivation (Richards 2004a)



Given our Conservation Law of Agree, DP1 in (2.135) can Agree with the probe C, since C at an earlier point of the derivation c-commanded DP2 and DP1 and hence enters into an Multiple Agree relation with them. But the question is whether such lowering should really be allowed.

The PTPD resolves the problem, reducing the Russian-doll Questions to a case of Multiple Merge. As shown in (2.136), the extraction of the whole *Wh*-phrase first occurs and then the extraction of the inner *Wh*-phrase applies to the original copy of the extracted entire *Wh*-phrase. Thus *Wh*-movements of DP2 and DP1 take place simultaneously. Given no condition to specify the relative order between DP1 and DP2 in this derivation, DP1 can either move to the specifier above DP2 or “tuck in” under DP2.

(2.136) Lowering Derivation (Richards 2004a)



2.7.4 The Edge of the Edge

Chomsky (p.c.) present more evidence for the inaccessibility of the edge of the edge of a phase. In the following examples, the *Wh*-element *of which* can be extracted out of the derived subject while it cannot be extracted out of the external argument.⁴⁴

(2.137) English: (Chomsky 2005)

- a. my friend Mary, of whom a picture was taken/arrived in the mail,...
- b. *my friend Mary, of whom a picture hit John on the head when it fell,...

If *of whom* is extracted after the DP *a picture of whom* is raised to [Spec, TP], as is forced under the standard cyclicity, there should be a Subject Condition effect. This prediction is refuted here, surprisingly. The fact makes sense, however, under the PTPD;

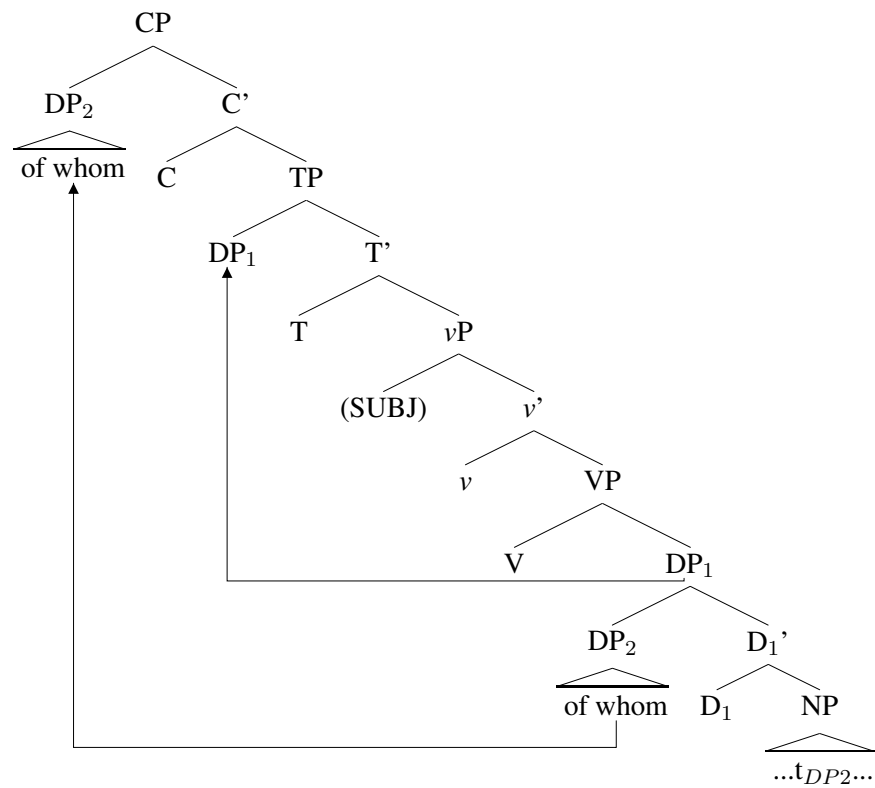
⁴⁴Chomsky (Fall 2004, class lectures) observes that this kind of island effect in English almost disappears when a raising structure is involved. This indicates that something that we have not explicated is going on with the raising derivation. In other words, there seems to be a derivational ordering effect for the intermediate infinitival T. This kind of effects is missing for long-distance extraction out of CP. If such a derivational ordering were allowed, (i) would be grammatical with plural agreement.

(i) Icelandic:

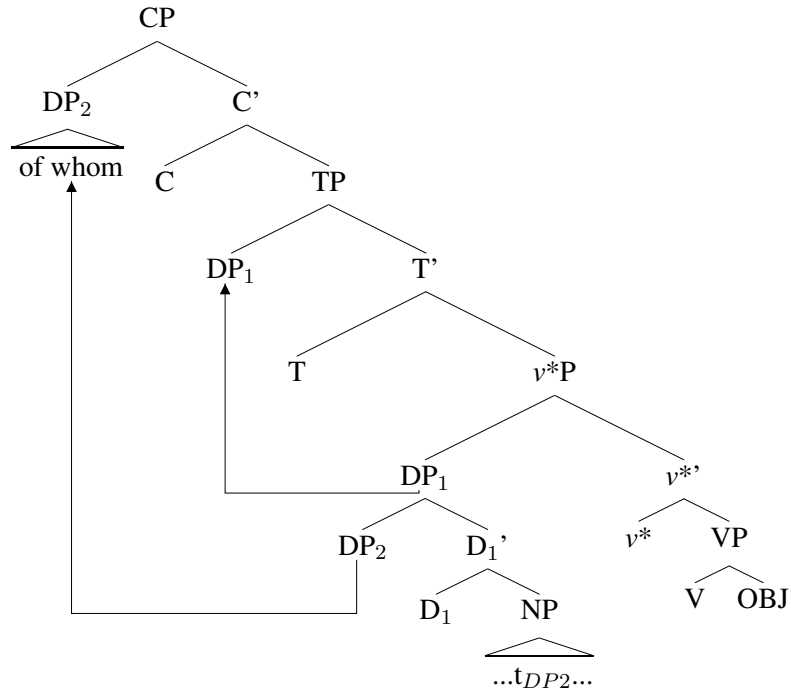
Hvaða stúdent veist þú að finnst/*finnast tölvurnar ljótar?
 which student(Dat.Sg.) know you C find(Sg.)/find(Pl.) computers(D.Nom.Pl.) ugly

‘Which student do you know considers the computers ugly?’

(2.138) Extraction out of Objects



(2.139) Extraction out of Subjects



C and T have OCC_{wh} and $u\phi$ (percolated from C by assumption), respectively. C attracts *of whom* from [Spec, DP] and T attracts *a picture of whom* to [Spec, TP]. Crucially, C cannot attract *of whom* from *a picture of whom* in [Spec, TP], simply because the latter occurrence does not yet exist and hence the absence of the Subject Condition effect.

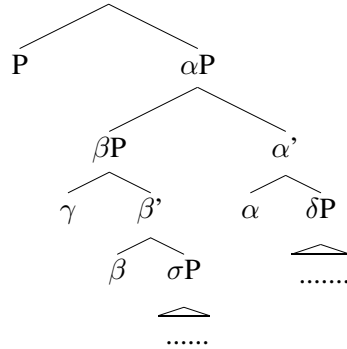
- (2.140) a. \bar{A} -Chain (*of-whom*_{CP}, *of-whom*_{VP})
 b. A-Chain (*of-whom-a-picture*_{TP}, *of-whom-a-picture*_{VP})

Chomsky further attributes the ungrammaticality to the subject island condition. Generalizing further, I propose Inaccessibility of the Edge of the Edge.

- (2.141) An element γ , which is at the edge of a phase head β , which is also at the edge of α cannot be accessed by a higher probe P.

In other words, only elements at the edge of a phase can be extracted. Now, consider the structure below.

(2.142) The Edge of the Edge



Suppose P is a probe and α and β are phase heads. In this configuration, γ , which is at the edge of the phase β which is also at the edge of the phase head α , is inaccessible to the probe P.

Baker (1988) shows that in the Bantu language Chichewa, possessor-raising out of objects is grammatical (2.143).

(2.143) Chichewa: Possessor-Raising out of Objects (Baker 1988, 271)

- a. Fisi a-na-dy-a nsomba **z-a** **kalulu**.
hyena Sp-Pst-eat-Asp fish Agr-of hare
'The hyena ate the hare's fish.'
- b. Fisi a-na-dy-er-a **kalulu** nsomba.
hyena Sp-Pst-eat-Appl-Asp hare fish
'The hyena ate the hare's fish.'

However, possessor-raising out of the subject external argument results in ungrammaticality as shown in (2.144).

(2.144) Chichewa: Possessor-Raising out of Subjects (Baker 1988, 275)

- a. Mbuzi **z-a** **kalulu** zi-na-dy-a udzu.
goats of hare Sp-Pst-eat-Asp grass
'The hare's goats ate the grass.'
- b. * **mbuzi** zi-na-dy(-er)-a kalulu udzu.
goats Sp-Pst-eat-Appl-Asp hare grass
'The hare's goats ate the grass.'
- c. * **kalulu** zi-na-dy(-er)-a udzu mbuzi.
hare Sp-Pst-eat-Appl-Asp grass goats
'The hare's goats ate the grass.'

Baker (1988) states that the same asymmetry is widely observed cross-linguistically (see also Massam 1985, Ura 1996), including Chamorro (Gibson 1992), Acehnese (Duire 1987), Swahili (Keach and Rochemont 1992), and Hebrew (Landau 1999).⁴⁵

⁴⁵Broadwell (1990) observes, however, that Chikasaw does allow possessor-raising out of subejcts.

The same restriction is observed in Kinyarwanda as discussed in Kimenyi (1980), but in a more interesting way.⁴⁶ Kimenyi discusses examples of double possessor-raising (see also Davies 1997). The lower possessor *umugore* cannot undergo possessor raising out of the the possessor *uumwaana*. Double Possessor Raising is also illicit.

First, consider normal possessor-raising out of objects. As shown in (2.145), the possessor of the object can raise to become a direct object of the verb.

(2.145) Kinyarwanda: Possessor Raising (Kimenyi 1980, 98)

- a. Umuhuungu a-ra-som-a igitabo **cy'umukoobwa**.
 boy he-Pres-read-Asp book of-girl
 'The boy is reading the book of the girl.'
- b. Umuhuungu a-ra-som-er-a **umukoobwa** igitabo.
 boy he-Pres-read-Appl-Asp girl book
 'The boy is reading the book of the girl.'

Quite significantly, it is illicit to raise the possessor out of another possessor of the direct object. As shown in (2.146b), the complex possessor can raise out of its host object DP. Crucially, however, (2.146c) establishes that the possessor cannot be raised out of another possessor.

(2.146) Kinyarwanda (Kimenyi 1980, 99, Baker 1988)

- a. umukoobwa a-ra-som-a [igitabo [cy'uumwaana w'umugore]].
 girl Sp-Pres-read-Asp book of-child of-woman
 'The girl is reading the book of the child of the woman.'
- b. umukoobwa a-ra-som-er-a [**uumwaana w'umugore**] [igitabo].
 girl Sp-Pres-read-Appl-Asp child of-woman book
 'The girl is reading the book of the child of the woman.'
- c. * umukoobwa a-ra-som-er-a **umugore** [igitabo [cy'uumwaana]].
 girl Sp-Pres-read-Asp woman book of-child
 'The girl is reading the book of the child of the woman.'
- d. * umukoobwa a-ra-som-er-er-a **umugore uumwaana** [igitabo].
 girl Sp-Pres-read-Asp woman child book
 'The girl is reading the book of the child of the woman.'

The asymmetry presents evidence for another instance of the ban on extracting an element from the edge of the edge of a phase –i.e. extraction of an element within a DP that is in the specifier of

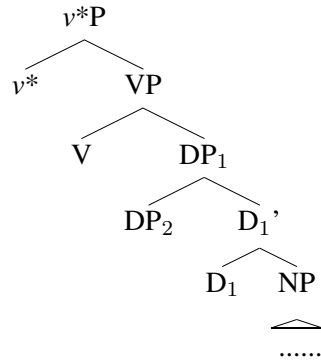
(i) Chikasaw: (Broadwell 1990)

Jan-at fosh'-at in-taloowa.
 Jan-Nom bird-Nom 3-sing
 'Jan's bird sings.'

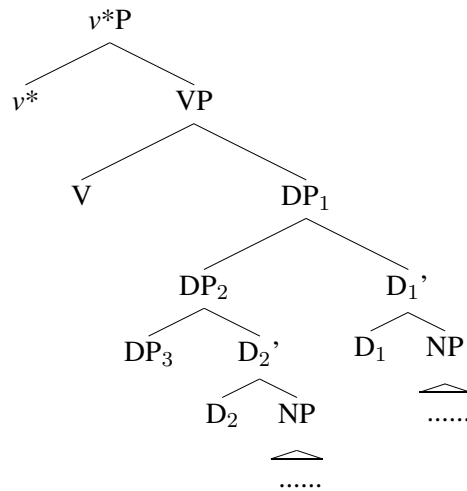
⁴⁶Kimenyi (1980) reports objectivization out of internal arguments (e.g. possessor raising), but does not have any example of possessor raising out of external arguments.

another DP.

(2.147) Agree (v^* , DP_2)



(2.148) *Agree (v^* , DP_3)



This is revealing in two respects. It adds another piece of evidence for the inaccessibility of the edge of the edge of a phase, and, more strikingly, it shows that a DP is a phase like a CP and a v^*P .⁴⁷

⁴⁷There is one confound, however. Inalienable possessor raising allows double-raising.

(i) Kinyarwanda (Kimenyi 1980)

- a. Umugabo y-a-vun-nye ukuguru **k'úúmwana w'ûmugóre**.
man he-Pst-break-Asp leg of-child of-woman
'The man broke the leg of the woman's child.'
- b. Umugabo y-a-vun-nye **ûmwana w'ûmugóre** ukuguru.
man he-Pst-break-Asp child of-woman leg
'The man broke the leg of the woman's child.'
- c. Umugabo y-a-vun-i-nye **umugóre ûmwana** ukuguru.
man he-Pst-break-Appl-Asp woman child leg

2.8 Concluding Remarks

In this chapter, I have defended the thesis of *Derivational Simultaneity* and proposed a PROBE THEORY OF PARALLEL DERIVATION (PTPD), while elaborating on the theory of *Multiple Agree*. The proposed theory neatly accounts for a wide range of the intricate Icelandic agreement phenomena with an articulation of a chain formation mechanism. In particular, it has been demonstrated that the PTPD makes correct predictions about the interactions between agreement, intervention, and varieties of movement types.

The two symmetric considerations —MIRRORSYMMETRY and CENTROSYMMETRY— play crucial roles in explicating the intricacies of Icelandic agreement phenomena. The proposed theory of agreement has also been shown to extend beyond Icelandic to Hindi gender agreement, English number agreement, and to a limited extent, French past participle agreement.

Finally, it has also been demonstrated that the PTPD has a far-reaching consequence for phenomena other than agreement, including the quantifier float in West Ulster English (McCloskey 2000) and *Russian-Doll* Questions (Richards 2004a) are provided with a principled explanation under the PTPD. Another consequence of the present chapter is the availability for ATB-movement of a principled explicit mechanism. And finally, further support has been added for the inaccessibility of the edge of the edge of a phase.

If the enterprise undertaken in this chapter is successful, two significant theoretical implications come into a picture: the thesis of Derivational Simultaneity and Multiplicity. Both of these notions have often been explicitly or implicitly rejected or ignored in the previous literature. The success of these theses may bring to light a radically different new picture of C_{HL} .

‘The man broke the leg of the woman’s child.’

As Baker (1988, 483n.6) notes, syntactic restrictions seem to be looser for inalienable possessors. More investigation is necessary and I will not go into details here. See also Massam (1985).

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