Isogloss
Open Journal of Romance Linguistics

Received: 18-09-2024
Accepted: 20-06-2025
Published: 14-07-2025

Complementizer deletion and the split hypothesis

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How to cite: Isolani, Elena. 2025. Complementizer deletion and the split hypothesis. RLLT 25, eds. Adam McBride, James Law & Willis Fails. Special Issue of *Isogloss. Open Journal of Romance Linguistics* 11(5)/4, 1-23.
DOI: https://doi.org/10.5565/rev/isogloss.498

Abstract

In Italian and Italo-Romance, the omission of the complementizer takes (at least) three distinct forms: CD1, observable in standard Italian, and CD2 and CD3 available in two Tuscan varieties, respectively in Florentine and Pisano. Although different conditions regarding the main and the embedded verbs independently influence the occurrence of these CD types, they consistently stem from verb movement towards the left-periphery. Resting on this assumption, this article proposes the split hypothesis according to which the verb raises towards distinct left-peripheral projections depending on a bundle of features associated with the main verb's status and the embedded verb's modality. Consequently, different types of complementizer deletion are structurally realized in separate projections. Additionally, this article addresses the implicational relation among CD1, CD2 and CD3 providing a theoretical framework rooted in the long-standing locality principle, the Head-Movement Constraint, and offering a parametric analysis via the Parametric Comparison Method, that accounts for the implicational nature of these phenomena.

Keywords: complementizer deletion, Italo-Romance, implicational relation, verb movement, parameters.

1. Introduction

Complementizer deletion (henceforth CD), referring to the omission of the declarative complementizer, is a geographically constrained phenomenon within Italo-Romance varieties, displaying a tripartite distribution. As opposed to previous studies (Cocchi

& Poletto 2002, 2007, Isolani 2023), which agree on a bipartite model distinguishing CD in standard Italian and CD in modern Florentine, three separate implementations of CD actually take place in Italo-Romance. The first —CD1— faithfully mirrors Cocchi and Poletto's (2002, 2007) analysis, characterized by a bridge selecting verb and an irrealis embedded verb:

(1) Standard Italian (Isolani 2023: 1)
Credo (che) verrà domani
believe.PRS.1SG (that) come.FUT.3SG tomorrow
'I think (that) he will come tomorrow.'

The second type, dubbed CD2, is insensitive to verb type in the main clause and to embedded verb modality (Cocchi & Poletto 2002, 2007, Isolani 2023):

(2) Florentine (Isolani 2023:1)
Mi dispiace (che) un ha portato
OBL.CL= be-sorry.PRS.3SG (that) not have.PRS.3SG bring.PTCP
nulla
nothing
'I am sorry (that) he did not bring anything.'

The third type of CD, called CD3, stands out for being grammatical with any combination of main and embedded verb, except for a non-bridge verb in the main clause and a realis embedded verb in the subordinate clause:

(3) Pisano (Isolani 2023: 11)
? Mi dispiace prende brutti voti
OBL.CL= be-sorry.PRS.3SG get.PRS.3SG bad marks
'I am sorry he gets some bad marks.'

Expanding Isolani's (2023) parametric system in a more comprehensive implicational model, it is possible to predict the following implicational relations among CD1, CD2 and CD3:

(4) a. Languages grammaticalizing CD2 also grammaticalize CD3 and CD1.
b. Languages grammaticalizing CD3 also grammaticalize CD1, but not CD2.
c. Languages grammaticalizing CD1 do not grammaticalize CD2 and CD3

From the above series of implicational relations, it is natural to wonder: (1) the nature of the fundamental trigger of this tripartite distribution and (2) whether a structural account can justify the implicational relations. The first research question will be addressed by demonstrating the joint role played by the featural combination of the main and the embedded verb, serving as the key ingredient of the tripartite distribution. The second research question will be investigated by advancing the 'Split Hypothesis' according to which distinct CD types map separate structural projections. This novel approach will be argued by relying on core locality principles (Rizzi 2004, 2013a, *i.a.*), such as the head-movement constraint (cf. Travis 1984, Baker 1988, Chomsky 1986, Rizzi 1990, *i.a.*), which determines the implicational structure of the model.

This article is structured as follows: Sections §2 §3 and §4 introduce CD1, CD2 and CD3, respectively, integrating background literature with novel empirical data and theoretical insights. Section §5 is dedicated to the presentation of the 'Split Hypothesis', formulating a theoretical account and Section §6 delves into the parametric analysis, capturing the implicational relations among the different types of CD. Section §7 presents some preliminary conclusions.

2. On CD1

The term *CD1* was introduced by Cocchi and Poletto (2002) in order to provide a more comprehensive account of complementizer drop in standard Italian (henceforth SI).[1] Poletto (1995), first, noticed that CD in SI is subject to three essential conditions: (a) the embedded verb must be inflected for irrealis modality, (b) the embedded clause cannot be left-dislocated and (c) the main verb must belong to the class of *bridge verbs*. The model proposed by Poletto (1995) deeply grounds in Vikner's (1994) analysis of embedded verb movement in Germanic languages, who offered a system of verbal classification based on the embedded V2 selection property of the main verb. Accordingly, *bridge verbs* are the selecting verbs licensing embedded V2 and *non-bridge verbs* are the selecting verbs unable to license embedded V2 and, thus, requiring an overt complementizer.

Poletto (1995) paralleled Germanic and SI grounding the comparison in the observation that verbs that allow for embedded V2 in Germanic languages are likewise the verbs that admit CD in SI. This parallelism proceeds by postulating that bridge verbs not only trigger verb movement in Germanic, but also in SI, ultimately establishing that CD is the result of embedded verb raising to the position where the declarative complementizer is expected. Cocchi and Poletto (2002) applied the so-called 'Alternative Checking Hypothesis' (cf. Zanuttini 1997, Obenauer 2001), according to which the raised verb functions as an alternative checker of the declarative complementizer, able to check the same bundle of features that the complementizer would do, which, in turn, can be dropped.

Structurally speaking, Poletto (1995) and related works, assume that the left-peripheral movement of the embedded verb targets the low C-area, that is Fin°, where it is in complementary distribution with an overt complementizer:[2]

(5) a. Standard Italian, Isolani (2023: 1)
[$_{IP}$ Credo [$_{CP}$ [$_{FinP}$ [$_{Fin°}$ che] [$_{IP}$ [$_{TP}$ verrà...]]]]]
believe.PRS.1SG (that) come.FUT.3SG
'I think that he will come.'

[1] More on CD can be found in Scorretti (1991), Rizzi (1982), Poletto (1995), Giorgi & Pianesi (1997, 2004), Cocchi & Poletto (2002, 2007), Giorgi (2010), Isolani (2023), Samo & Isolani (2024).

[2] Poletto (1995), thus, embraces the view that the declarative complementizer is not restricted to a single structural position, but it has a more hybrid featural status, compatible with distinct left-peripheral projections where it situates according to the bundle of features it licenses (Ledgeway 2005, Paoli 2007, Colasanti 2018, Cardullo & Groothuis 2024, Isolani 2025, *i.a.*).

b. Standard Italian, Isolani (2023: 1)
[IP Credo [CP [FinP [Fin° verrà] [IP [TP ~~verrà~~...]]]]]
believe.PRS.1SG come.FUT.3SG
'I think he will come.'

A diametrically different starting point was pursued by Giorgi and Pianesi (1997, 2004), who proposed a syncretic based analysis to account for CD in SI. Despite agreeing with Poletto (1995) on verb movement in complementizer omission context, they completely rejected the parallelism between SI and Germanic languages. They, rather, framed the analysis within a featural basis account according to which CD results from the irrealis property of verb realizing a "syncretic category […] projecting the agreement and the mood features" (Giorgi & Pianesi 1997: 239).

3. On CD2

Considering Italo-Romance varieties, CD seems a rather marginal phenomenon, except for Florentine where it is robustly attested, portraying more flexible patterns with respect to SI. In addition to CD1, complementizer omission in Florentine can occur with all the other combinations of main (bridge vs. non-bridge) and embedded verb (realis vs irrealis), subsumed under the label *CD2* (Cocchi & Poletto 2002, 2007).[3] Nonetheless, Cocchi and Poletto (2002, 2007) posed an inescapable condition for the felicitous realization of CD2, that is the occurrence of a clitic-like element (e.g. pronoun, negation, auxiliary) intervening between the main and the embedded verb:

(6) Florentine, Cocchi & Poletto (2002: 3)

Gli	dispiace	la	un	venga	a casa
OBL.CL=	be-sorry.PRS.3SG	SCL=	not	come.PRS.3SG	home

'He is sorry she does not come home.'

[3] It is worthwhile distinguishing modern Florentine from past stages of the language for a more comprehensive analysis of CD. Whereas this phenomenon was completely ruled out in Old Florentine, the opposite manifested in Renaissance Florentine, where the omission of the complementizer was attested in all embedded declaratives, overcoming the few constraints posed by modern Florentine CD. Notably, this phenomenon was also realized in restrictive object relative clauses (cf. I), and, more rarely, in subject relative clauses (cf. II):

(I) Renaissance Florentine, Cocchi & Poletto (2007: 54)

per	intedere	quello	____	avevi	fatti
to	understand.INF	the-thing		have.PST.2SG	do.PTCP

'to understand the thing (that) you had done.'

(II) Renaissance Florentine, Cocchi & Poletto (2007: 54)

di	meritare	uomini	____	l'	avesson	servito
to	deserve.INF	men		him	have.COND.3PL	serve.PTCP

'to deserve men that would have served him.'

The examples in (I) and (II) are ruled out in present-day Florentine, signalling, thus, the restrictions applied to this phenomenon at the present stage.

The sentence in (6) is composed by a non-bridge verb in the main clause and by an irrealis verb in the embedded clause. Moreover, it contains the clitic element *la* 'she' that, according to Cocchi and Poletto (2002, 2007), functions as the main character of the whole derivation. The account offered is grounded in the 'Alternative Checking Hypothesis', on a par with the analysis of CD1. The alternative checker of the declarative complementizer in CD2 context is not the embedded verb, which remains in a low projection, but the intervening clitic element, which moves out of its merge position and targets ForceP, where it licenses the relevant feature:

(7) a. Florentine, Isolani (2023:1)
[IP Mi dispiace [CP [ForceP [Force° che] [IP [NegP [Neg° un]
OBL.CL= be-sorry.PRS.3SG that not
[TP ha [VP portato nulla]
have.PRS.3SG bring.PTCP noting
'I am sorry that he did not bring anything.'
b. Florentine, Isolani (2023:1)
[IP Mi dispiace [CP [ForceP [Force° un] [IP [NegP [Neg° ~~un~~]
OBL.CL= be-sorry.PRS.3SG not
[TP ha [VP portato nulla]
has.PRS.3SG bring.PTCP anything
'I am sorry he did not bring anything.'

Therefore, according to Cocchi and Poletto (2002), CD1 differs from CD2 in two respects: the raised element and the landing site of the movement. Cocchi and Poletto (2007) proposed a second hypothesis to account for CD2 which does not rely on the movement operation, but on the Agreement relation established between Force° and the clitic-like element in its external merge position. Hence, the clitic does not raise but can check the relevant feature in its original site.

Isolani (2023) advanced a third account of CD2, inspired by Poletto's (1995) theory of verb movement in CD1 context and corroborated by empirical evidence showing that the clitic-like element cannot be considered the core element of the whole derivation. Contrary to Cocchi and Poletto (2002, 2007), who postulated the obligatoriness of the clitic-like element in CD2 context, Isolani (2023) observes that the clitic is, rather, optional. If CD2 can take place without the presence of the clitic element, then the clitic must be excluded as a potential factor triggering CD2. An alternative solution grounds in the role of the embedded verb, predicting its movement towards a high portion of the left-periphery, presumably ForceP, to check the relevant feature. If a clitic-like element is, eventually, present, it moves along with the embedded verb:[4]

[4] Despite agreeing with the optionality of a clitic-like element, an anonymous reviewer pointed out that there are still some constraints that might affect the realization of CD in Florentine, suggesting a tense-based account, building upon the following observation:

(I) A: Sai se Gianni viene alla festa?
know.PRS.2SG if Gianni come.PRS.3SG to-the party
'Do you know if Gianni comes to the party?
B: ??So viene
know.PRS.1SG come.PRS.3SG
'I know (that) he comes.'

(8) Florentine
[IP Gli ho comunicato [CP [ForceP [Force° lascio] [IP [TP
OBL.CL= have.PRS.1SG communicated quit.PRS.1SG
[T° ~~lascio~~] [DP il lavoro la settimana prossima]]]]]]]]
the job the next week
'I told them I will quit the job next week.'

(9) Florentine
[IP È giusto [CP [ForceP [Force° lavora] [IP [TP [T° ~~lavora~~]
be. PRS.3SG fair work. PRS.3SG
[AdjP poco]]]]]]]]
a-little
'It is fair he works a little.'

In (8), the embedded verb is inflected for the 1st person singular, which allows for the omission of a subject clitic. However, the lack of any clitic-element does not trigger ungrammaticality, meaning that another mechanism must be in place to account for the well-formedness of (8). Likewise, (9) instantiates CD with an adjectival expression in the main clause, immediately selecting the embedded verb without resorting to any intervening element.[5]

Considering the order between the embedded verb and other left-peripheral constituents, revealing that the predicate can only precede these items, embedded verb movement towards a prominent left-peripheral projection was argued by Isolani (2023).

In sum, the theoretical approach I aim to pursue is based on a unifying view of CD1 and CD2, both affected by embedded verb movement (Isolani 2023). The main contrast between the two phenomena is the final location of the raised verb, which is lower for CD1 and higher for CD2.

4. On CD3

The proposal of CD3 stems from the observation that CD is not only restricted to SI and Florentine, but also other Tuscan varieties show a variant of this phenomenon. Specifically, Pisano presents a CD model which resembles Florentine in being more flexible with respect to the acceptability of main and embedded verb. However, unlike Florentine, Pisano does not readily admit all possible verbal combinations, excluding

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B': Ho saputo viene
Have.PRS.1SG know.PTCP come.PRS.3SG
'I have known it comes.'

In my opinion, it is questionable whether the answer in B is completely ruled out, despite admitting that B' sounds more natural. Nonetheless, the example in (I) introduces a further pattern of variation that could be appropriately parametrized through a more fine-grained model that also includes micro-parameters based on tense marking.

[5] See Poletto (1995: 55) for adjectival expression in Italian that require an overt complementizer, on a par with German. Also, the verb *comunicare* 'to communicate' was not listed in Vikener's list. However, this verb in German (*mitteilen*) functions as a non-bridge verbs.

CD when the main verb belongs to the non-bridge class and the embedded verb is inflected for realis morphology. This type of configuration qualifies CD3. From the structural account undertaken in the foregoing, the representation of CD3 results as follows:

(10) a. Pisano
[IP Ho calcolato [CP [Force [Force° che] [IP riesco
Have.PRS.1SG calculate.PTCP that manage.PRS.1SG
a correre 5km]]]]
to run.INF 5km
'I calculated that I manage to run for 5km.'
b. Pisano
*[IP Ho calcolato [CP [Force [Force° riesco] [IP ~~riesco~~ a
Have.PRS.1SG calculate.PTCP manage.PRS.1SG to
correre.INF 5km]]]]
run 5km
'I calculated that manage to run for 5km.'

The embedded verb in (10b) is unable to move out from its original position and to target the high left-periphery. This outcome contradicts all the other combinations of main and embedded verb, which are grammatical in Pisano. Building on the premise that CD is strictly correlated with verb movement, the fact that the sole ill-formed combination in Pisano is provided by the non-bridge selecting verb and the realis embedded verb suggests that something inhibits verbal movement towards a dedicated left-peripheral projection in this context, resulting in the emergence of the overt complementizer (cf. 10a).

5. A new proposal to account to CD

The syntactic and typological variation described above, whereby CD can surface in (at least) three different forms, each one constrained by its own conditions, does not only contribute to a more comprehensive understanding of this phenomenon, but also highlights a series of implicational patterns occurring cross-linguistically. Specifically, languages where CD2 is lexicalized, like Florentine, also present CD3 and CD1. To put it differently, the realization of CD2, based on the availability of all the combinations of main and embedded verbs, naturally incorporates the realization of CD3 and CD1 where only a smaller handful of verbal combinations is borne out. An analogous trend is depictable for CD3 and CD1; languages like Pisano reject only one verbal combination (non-bridge selecting verbs and realis embedded verb), being, hence, compatible with all the others. They, thus, also lexicalize CD1, identified by the most restricted verbal combination, it being grammatical exclusively with a bridge selecting verb and an irrealis embedded verb. In sum, languages like Florentine, with CD2, systematically instantiate CD3 and CD1 and languages like Pisano, presenting CD3, also grammaticalize CD1, but not CD2. On the other hand, languages like SI, with CD1, do not automatically manifest CD2 and CD3.

Given this tripartite distribution of CD, emphasized by a tight series of implicational relations, it is reasonable to question about the factor triggering these variational patterns. In pursuit of this goal, CD will not merely be considered as a

phenomenon resulting from verbal movement, but a more complex model will be offered. Specifically, CD is truly the result of the verb moving towards the left-periphery, but the exact position that the embedded verb fills in within the CP stems from the joint role of the main and the embedded verb, particularly in terms of their featural specification. The left-periphery, hence, contains several heads which can, potentially, host the verb in all the three contexts of CD. Each of these left-peripheral heads encodes a bundle of features identifying the nature of the main verb [±BRIDGE] and the modality of the embedded verb [±REALIS] and, respectively, probing the subordinate verb in its merge position, which, in turn, raises towards the dedicated projection.

In the following sections, this point will be made more explicit, drawing a split within the CP and identifying the potential heads hosting the verbs. Relying on this split, the implicational relations among the different types of CD can be accounted for.

5.1 The case study

The account of CD advanced by Isolani (2023) relies on verb movement towards distinct C-projections, that is Fin° in CD1 context and Force° in CD2 context. This separation is based on empirical evidence showing that, in CD2 context, the verb is apt to precede left-peripheral constituents, like topics or focus, while in CD1 context, the verb can also follow them. Consequently, the verb consistently appears at the outmost edges of the left-periphery, marking its boundaries on both sides and enclosing other displaced constituents, which either precede or follow the raised embedded verb.

This view fully complies with the established assumption of flexible verb movement whereby the predicate can raise towards different left-peripheral heads, generally ForceP and FinP, due to some inherent properties of the language (Wolfe 2016; 2020). In light of this, a far more versatile approach can be put forth according to which ForceP and FinP are not the only landing positions of the verb displacement, but other intermediate left-peripheral heads can host the verb. Considering movement as a result of a Probe-Goal relationship aimed at checking some featural traits, there is no constraint a posteriori that prevents heads in the intermediate left-periphery from probing the verb in order to license the relevant features. In the spirit of this more hybrid and less constrained analysis, verb movement in CD contexts find a more relatable and trustworthy account.

The postulation of a more variegated verb movement rests on the observation that it is not truly the case that whenever CD2 context is realized, the verb always precedes left-peripheral constituents. As erstwhile mentioned, CD2 comprises the entire set of main and embedded verb combinations, that, accordingly, do not reveal a uniformly attested behaviour with respect to left-peripheral elements ordering. In other words, the grammaticality of CD and the occurrence of left-peripheral constituents is apt to vary depending on the selecting verb class and on the embedded verb modality. Empirically speaking, CD, selected by non-bridge verbs, was tested, followed respectively by a realis and an irrealis embedded verb. These verbal combinations, grouped under the CD2 label, illustrate verb movement towards ForceP (Isolani 2023); as such, they are both expected to exhibit the compatibility of the embedded verb followed by some left-peripheral constituents and to completely rule out the reverse order:

(11) a. Florentine
*Dubito probabilmente la cambia scuola
doubt.PRS.1SG probably SCL= change.PRS.3SG school
'I doubt she probably changes school.'
b. Florentine
Dubito probabilmente la cambi scuola
doubt.PRS.1SG probably SCL= change.SBJV.3SG school
'I doubt she probably changes school.'

Structures in (11a) and (11b) show a different degree of acceptability: the former, with a realis embedded verb results ungrammatical, whereas the latter is well-formed. If one assumes that the verb moves towards ForceP in both (11a) and (11b), both sentences should be degraded as the prominent position of the displaced verb should be incompatible with a high adverb like *probabilmente* 'probably' to its left. Since the adverb fits in the same structural projection in both sentences, the fact that only (11a) is ungrammatical suggests that the verb is likely to fill two different left-peripheral heads in (11a) and (11b). In other words, the embedded verb moves higher in (11a), thus ruling out the occurrence of an adverb preceding it, whereas it moves lower in (11b), leaving some space to its left for the high adverb. This distribution is also confirmed by an increase of (11a)'s acceptability if the adverb follows the embedded verb:

(12) Florentine
Dubito (*probabilmente) la cambia (?probabilmente)
doubt.PRS.1SG probably SCL= change.PRS.3SG probably
scuola (probabilmente)
school probably
'I doubt she probably changes school.'

Therefore, structures with CD composed by a non-bridge selecting verb manifest verb movement towards two separate left-peripheral projections depending on whether the embedded verb is inflected for realis, moving higher, or irrealis, moving lower.

As for bridge selecting verbs, the position of the embedded verb in CD context is reconfirmed as tendentially low, being compatible with some left-peripheral items to their left. However, it is hard to determine the exact position of elements in the low left-periphery given the looseness of the boundary between the CP and the IP areas. Therefore, in this pilot study, an in-depth analysis of CD with bridge selecting verbs is deliberately overlooked, considering only the combination of bridge selecting verb and irrealis embedded verb as a representation of CD in SI which, structurally speaking, takes effect in a low left-peripheral projection.

In sum, a more detailed investigation on CD sheds light on a more heterogeneous typological variation. Endorsing the view that CD is systematically the result of verb movement towards the CP, the outcome of this operation is significantly different depending on the combination of main and embedded verb. If the selecting verb belongs to the non-bridge class, a higher portion of the left-periphery is activated, and the embedded verb can move higher or lower within this area depending on whether it is inflected for realis or irrealis morphology. Conversely, if the selecting verb is a non-bridge verb, a lower portion of the CP is operative, with the embedded

verb moving within this area. A differentiation between realis and irrealis morphology with bridge selecting verbs was abandoned given the lack of reliable evidence so far. However, this distinction is completely immaterial for the purpose of this analysis.

5.2 The split hypothesis

Relying on the verbal distribution described in §5.1, a 'Split Hypothesis' of the left-periphery in relation to the movement of the verb is argued. Accordingly, in CD contexts, the verb raises towards a distinct C-head depending on the combination of the main and the embedded verb. Therefore, a split in terms of the different types of CD can be outlined.

As hinted above, bridge selecting verbs activate a lower chunk of the left-periphery triggering verb movement of the embedded predicate. This site corresponds to the realization of CD1 as instantiated in SI. Therefore, it is reasonable to posit the existence of a dedicated head in the low left-periphery probing the embedded verb when it is selected by a bridge verb. For the sake of simplicity, this head will be called BI°, standing for the combination of the bridge verb in the main clause and the irrealis verb in the embedded clause.[6]

Considering the left-periphery portion activated by non-bridge selecting verbs, the leftmost edge is a dedicated site for embedded verbs inflected for realis. Compared to CD1, limited to bridge selecting verbs and irrealis embedded verbs, this combination of main and embedded predicate represents an outlier, diverging from the more restricted CD1 pattern in both the main and the embedded clause. Therefore, for the sake of simplicity, this combination of main and embedded verb can be considered as the prototypical CD2 case, while still acknowledging that CD2 encompasses all four main-embedded verb patterns. From a structural perspective, it is reasonable to postulate the existence of a high left-peripheral head activated whenever the main verb belongs to the non-bridge class and the embedded verb is inflected for realis, triggering verbal movement of a predicate endowed with the appropriate modality specification. Given the combination of main and embedded verb, this head can straightforwardly be dubbed as NR°.[7]

The remaining CD case concerns the activation of a left-peripheral head whenever the selecting verb is non-bridge and the embedded verb is inflected for realis morphology. This combination will be associated with CD3; as a matter of fact, languages with CD3, like Pisano, minimally differ from languages with CD2, like Florentine, since they are not compatible with a non-bridge selecting verb and a realis embedded verb. However, if the modality of the embedded verb is altered, switching to irrealis, CD is grammatical in Pisano. Therefore, given that the trigger of either CD2 or CD3 corresponds to the boundary between realis and irrealis when a non-bridge verb oversees the derivation, it is conceivable to associate CD3 with the representative

[6] BI° can (almost) safely qualify as FinP given the empirical evidence showing the extreme low position of the verb in CD1 context. However, in light of the split provided, the new terminology based on the main-embedded verb pattern will be retained in the remainder of this paper.

[7] Similarly to BI°, also NR° could be associated with a more traditional terminology, namely with Force° given the significant prominence of the verb in this CD context. However, given the absence of conclusive empirical evidence showing that the verb truly moves to Force°, a more general labelling will be pursued in this paper.

case of non-bridge selecting verb and irrealis embedded verb. In a manner akin to CD2, also for CD3, the implicit assumption that it comprises other verbal combinations is retained. Whenever CD3 is realized, a specific head in the left-periphery, dubbed NI°, given the main-embedded verb pattern, is licensed.

The following representation displays the distribution of the three projections described above:

(13) [ForceP [NRP [NR° V_{realis}] [TopP [NIP [NI° $V_{irrealis}$] [TopP [BIP [BI° $V_{irrealis}$] .. [IP [I° ~~V~~]]]]]]]]

According to the structure in (13), CD1 takes place whenever the verb moves towards BI° replacing the overt complementizer:

(14) Standard Italian
Credo [ForceP [NRP [NR°] [TopP [NIP [NI°] [TopP [BIP [BI° verrà] … [IP [I° ~~verrà~~]]]]]]]]
believe.PRS.1SG come.FUT.3SG
'I believe he will come.'

On the other hand, CD2 (in the most extreme case) is the result of verb raising towards NR°:

(15) Florentine
Mi dispiace [ForceP [NRP [NR° prendo] [TopP [NIP [NI°] [TopP [BIP
OBL.CL= be-sorry.PRS.3SG take.PRS.1SG
[BI°] … [IP [I° ~~prendo~~] [DP brutti voti]]]]]]]]
bad marks
'I am sorry I get some bad marks.'

Ultimately, CD3 (in the most minimally different case from CD2) emerges if the verb moves towards the intermediate projection NI°:

(16) Pisano
Mi dispiace [ForceP [NRP [NR°] [TopP [NIP [NI° venga] [TopP [BIP [BI°] …
OBL.CL= be-sorry.PRS.3SG come.SBJV.3SG
[IP [I° ~~venga~~] [PP da sola]]]]]]]]
alone
'I am sorry she comes alone.'

Therefore, the split is composed by a series of functional heads, each one endowed with an independent bundle of features determined by the nature of the main and of the embedded verb. Specifically, the selecting verb provides a functional trait identifying the verbal class, that is [±BRIDGE], whereas the embedded verb expresses the feature standing for the morphological inflection, that is [±REALIS]. As for the featural checking process involved, it is reasonable to postulate a chain of agreement operations beginning at the level of the main clause and culminating with the movement of the embedded verb. Following the Minimalist framework (cf. Chomsky 2000, 2001, *i.a*), according to which Agreement is a syntactic operation which occurs between a probe *P* and a goal *G* with matching features, a chain of Probe-Goal relationships can be established to account for CD configurations. In the first place, the main verb, bearing [±BRIDGE] and selecting either an overt complementizer or the

embedded verb, activates a search in its c-command domain to find a featural matching head. This head corresponds to an embedded left-peripheral projection which can either host a declarative complementizer, fulfilling the featural checking requirement, or remain phonetically empty. In the latter case, an appropriate element needs to raise from a lower projection and fill in this vacant position. The search for this filler is activated by another feature encoded by the same head; indeed, the embedded left-peripheral projection not only carries the [±BRIDGE] specification but also expresses a trait indicating the morphology of the embedded verb, that is [±REALIS]. Since the former has already been licensed by the Probe-Goal relationship established with the selecting verb, the latter gives rise to a new search within the c-domain to properly activate the morphological feature. Therefore, the embedded left-peripheral head initiates a Probe-Goal relationship with a matching exponent, that is the embedded verb. As a result of this checking operation, the embedded verb abandons the inflectional phrase and reaches the Probe domain, occupying the head position.

In sum, CD falls out as a consequence of a double Probe-Goal relationship, the first one being broader and selecting a dedicated area within the CP and the second being finer-grained and triggering verb movement. Indeed, initially, the relationship sheds light on a specific portion of the embedded left-periphery, namely a higher one if the feature involved is [NON-BRIDGE] and a lower one if the respective trait is [BRIDGE]. Subsequently, the Probe-Goal relationship, activated by the embedded left-peripheral head in the CP area predicted by the main verb class, targets the embedded verb, which correspondingly displaces towards the respective C-projection.

The 'Split Hypothesis', thus, permits to provide an answer to the question of where the tripartite distribution of CD originates. Three different types of CD exist, compatible with three separate left-peripheral projections. At this point, it is necessary to find an answer for the second question addressed, that is how the implicational relations among CD1, CD2 and CD3 can be accounted for.

5.3 Implicational relations explained by locality

As erstwhile mentioned, the different CD configurations are inherently tied by a series of implicational relations reported below:

(17) a. Languages grammaticalizing CD2 also grammaticalize CD3 and CD1.
b. Languages grammaticalizing CD3 also grammaticalize CD1, but not CD2.
c. Languages grammaticalizing CD1 do not grammaticalize CD2 and CD3

Given the structural heads involved in the lexicalization of CD1, CD2 and CD3, the statements in (17) describe a left-to-right implicational trend whereby the less restricted CD type - CD2 - situated in a more prominent projection, also yields the more restrained one - CD1- , but the reverse does not take place. Indeed, languages with CD2, such as Florentine, also lexicalize CD3 and CD1, being compatible with the whole array of main and embedded verb combinations. From a structural perspective, CD2 is, unsurprisingly, placed in the higher projection of the split, NR°, suggesting, thus, that the implicational relations in (17) are tightly connected to some structural properties. This intuition is further confirmed by the relationship established between CD3 and CD1: only languages with CD3, like Pisano, also exhibit CD1, but not the opposite. Parallelling CD2, also CD3 is projected in a structurally higher

projection than CD1, putting forward a left-to-right implication with considerable structural connections.

From a theoretical perspective, structural constraints of the kind observed in (17) can be subsumed into the broad concept of *locality*. Deliberately oversimplifying, locality principles affect the syntactic structure by narrowing the scope of a given property to a local portion of the construction (Rizzi 2013b). A fundamental tenet of locality consists in the Head-Movement Constraint (henceforth HMC), first introduced by Travis (1984), according to which head movement needs to occur in a local configuration, targeting the first available head properly governing it.[8] Accordingly, no intervening head can be skipped by head movement; in other words, whenever the head ultimately lands into a non-local projection, it needs to pass through all the intermediate and more local projections in order to comply with the HMC.

In relation to CD configurations, it is reasonable to apply the HMC to the head movement undertaken by the verb while raising from the embedded inflectional domain towards the split in the left-periphery. As observed in (13), when the CD configuration activated is characterized by a non-bridge selecting verb and a realis embedded verb, the highest projection within the split, dubbed NR°, is borne out. If one assumes that the embedded verb raises straightforwardly towards this projection, the HMC is deliberately violated. As a matter of fact, the split contains other more local heads, (at least) NI° and BI°, endowed with a bundle of features that partially mirrors the featural specifications on the probe NR°, which can potentially attract the goal, namely the verb, in their domain. Putting it differently, NI° and BI° function as interveners in the long-distant movement pursued by the embedded verb. Indeed, they both contain some featural specifications characterized by the class of the main verb and by the morphology of the embedded verb, that partially match the features expressed by the probe NR°.[9] Following this analysis, (15) can be represented as:

(18) Florentine
Mi dispiace [$_{ForceP}$ [$_{NRP}$ [$_{NR°}$ prendo] [$_{TopP}$ [$_{NIP}$ [$_{NI°}$ ~~prendo~~] …
OBL.CL= be-sorry.PRS.3SG take.PRS.1SG
[$_{IP}$ [$_{I°}$ ~~prendo~~] [$_{TopP}$ [$_{BIP}$ [$_{BI°}$ ~~prendo~~] [$_{DP}$ brutti voti]]]]]]]
bad marks
'I am sorry I get some bad marks.'

As shown by (18), the embedded verb raises from the inflectional domain towards the split passing through all the intermediate projections and eventually reaching NR°, where the proper combination of feature is matched. Therefore, languages with CD2 also exhibit CD3 and CD1, or, more precisely, languages with verb movement towards NR° also lexicalize verb movement towards the intermediate

[8] For more details on the HMC, see Travis (1984), Chomsky (1986), Baker (1988), Rizzi (1990), Roberts (1994, 1997), *i.a.*

[9] The featural specification of the intermediate projections within the split partially matches the functional features carried out by the NR°. As for NI°, it shares with NR° the main verb feature, meaning that both heads correspond to the portion of the split selected by the search activated by the matrix verb. As for BI°, it apparently looks featurally more distant with respect to the probe, given the opposite featural specification for both traits. Nonetheless, the fact that all heads in the split are consistent with a bundle of features related to the same morphological areas (class of verb and modality) indicate that an underlying similarity survive and, consequently, gives rise to an approximately effective intervention effect.

projections due to the intrinsically structural requirement of satisfying the HMC. Verb movement needs to take place in a local configuration, meaning that whenever the final position is distant from the external merge position, the verb needs to stick to the locality principle according to which the first featurally available head is filled in. If this head does not fully match with the probe, the verb can continue its movement towards a higher projection. Doing so, the verb passes through NI° and BI° as intervening heads prior to reaching NR°. Florentine, hence, exhibits the full array of CD because all the projections within the split are affected by verbal movement. Conversely, Pisano does not activate NR°, meaning that it cannot grammaticalize verb movement towards such a high position within the left-periphery, ruling out CD2. On the other hand, it licenses verbal movement up to the NI° within the split, encompassing hence the lower BI°, functioning as intervener. Thus, the verb in CD3 context does not directly target NI° but also stops within the lower BI°. As a result, the language not only presents CD3, but also CD1, yielded by verb movement to BI°. Ultimately, CD1 is characterized by the most restricted conditions and is structurally associated with the lowest head of the split BI°. This indicates that languages like SI only pattern with CD1 due to the tighter constraints related to verb movement. The verb in these languages is unable to reach more prominent functional projections, being, rather, stranded within a low portion of the split. As such, the projections in charge of CD2 and CD3 are not activated, confining complementizer drop configuration to CD1.

In sum, locality principles, like the HMC, can successfully serve the analysis of CD by postulating some fine-grained conditions that need to be satisfied to provide a well-formed construction. The verbal head can only move within a local configuration, implying that if the highest head within the split triggers the derivation, all the intermediate projections are affected by verbal movement as well; on the contrary, the lower the probe is, the more restricted CD becomes, culminating with CD1 that is structurally obtained in the lowest projection within the split, thereby preventing further verb movement. Therefore, the implicational relations reported in (17) can be successfully accounted for by applying the HMC to verb movement. Languages with CD2 also show CD3 and CD1 because the verb can reach all the heads where these three distinct types of complementizer drop take place. Likewise, languages with CD3 also present CD1 due to the availability of verb movement. Conversely, languages with CD1 do not trigger CD2 and CD3 because in these varieties, verb raising is confined to a lower area, unable to reach more prominent projections.

6. Parametric Analysis

The comprehensive array of implicational relations in (17) can be analysed using a parametric approach, which effectively captures the most intrinsic variation across languages. In this regard, the Parametric Comparison Method (henceforth PCM) is postulated, which constitutes a tool for language comparison that strives to reconstruct linguistic phylogeny and to provide new linguistic taxonomies relying on the notion

of syntactic parameter.[10] For the purpose of this analysis, this tool will not be used to produce language classification outcomes; the preliminary steps will be, rather, implemented in order to offer a parametrization of the CD phenomenon and to shed light on the implicational relations from a parametric perspective. Moreover, unlike the usual applications of the PCM, the implementation of this tool will be visibly incremented by aligning with the parameters' hierarchy strategy (cf. Roberts 2019).[11] Along these lines, parameters will be distributed in a hierarchical fashion whereby the top of the hierarchy is constituted by parameters with a broader scope, whereas the bottom is dedicated to finer-grained properties, defining a more restricted variation.

6.1. PCM, parametric value assignment and parametric implications

The concept of syntactic parameter was first introduced by Chomsky's (1981) Pisa Lectures as one of the main components, along with principles, of the Universal Grammar (UG), that is the theory that posits that all humans are endowed with an innate language faculty. By proposing the 'Principles and Parameters', Chomsky (1981) brought attention to the concept of parameters, which describe the fundamental differences and similarities between languages, thus addressing the core of linguistic variation.

From a comparative viewpoint, Longobardi (2001) advocated that syntactic parameters are the most adequate objects of comparison. As opposed to other lexical properties, widely overused by more old-fashion comparative tools, such as the Classical Comparative Method and the Mass or Multilateral Comparison, syntactic parameters are more diachronically and synchronically stable and less influenced by external factors. Moreover, unlike other linguistic properties, the selection of parameter values is unconscious and, hence, unaffected by the individual choice. The PCM, hence, emerges as an innovative comparative tool that takes sets of syntactic parameters from different languages as input to computations and outputs phylogenies or family trees of these languages which clearly represent their synchronic and/or diachronic distribution through a series of more proximal or more remote branches. To achieve this goal, two preliminary steps need to be followed: (a) the relevant parameters must be selected and (b) a sample of languages needs to be established. Both steps are regulated by the Modularized Global Comparison (MGC); firstly, proposed by Longobardi (2003), it aims to define as many parameters as possible to be tested on as many languages as possible but within the same syntactic module or domain. In this regard, most applications of the PCM were devoted to the exploration of the nominal domain, treating parameters that regularize syntactic phenomena that

[10] More details about the various applications of the PCM can be found in Longobardi (2001, 2003), Longobardi & Guardiano (2009, 2017), Gianollo et al. (2008), Guardiano & Longobardi (2016), Longobardi (2018), Ceolin et al. (2020, 2021), *i.a.*

[11] Parameters hierarchy strategy was introduced as an attempt to show that parameters with broader scope (or macro-parameters) parameter with smaller scope (or micro-parameters) do not work independently from one another, as suggested by Baker (1996, 2008), who promoted the role macro-parameters, or by Kayne (1996, 2000) and Manzini and Savoia (2005), who highlighted the importance of micro-parameters. Along the lines of the parameters hierarchy strategy, macro- and micro-parameters act in unison, both contributing to the syntactic variation in synchronic and diachronic terms (cf. Roberts & Roussou 2003, Roberts & Holmberg 2010, Biberauer & Roberts 2012, 2015, Roberts 2012, 2019, Biberauer, et al. 2014, Ledgeway & Roberts 2017, *i.a.*).

occur within the DP area (cf. Longobardi 2001, 2003, Guardiano & Longobardi 2016, Ceolin et al. 2020, *i.a.*).

Given a parametric dataset and a languages inventory, each parameter is assigned with a parametric value for each language under analysis. Traditionally, parametric values are binary, defining, hence, an opposition between the positivity (+) and the negativity (-) in a given language. The PCM introduces a third possible value, 0, which signifies the neutralization of a particular parameter as a result of the values assigned to certain previously assigned parameters. If a parameter is assigned with 0, checking its actual value becomes unnecessary, as it is determined by the values previously assigned to one or more other parameters. Therefore, the value 0 can become 0+ or 0- depending on whether the parameter(s) it is implicationally related to determine(s) that the value is positively or negatively irrelevant.

One of the major contributions of the PCM to the study of the historical relatedness among languages is grounded in the rise of a series of parametric implications that eventually play a crucial role in the computation of the syntactic distances and in the resulting linguistic taxonomy. As mentioned by Guardiano et al. (2020), it is not the case that, given two languages displaying opposite phenomena, these necessarily stem from the opposite valuation of the same parameter, likewise, if two languages present the same phenomenon, this is not automatically the result of a single parameter set for the same value. In the vast majority of cases, parameters do not function independently from one another, but they mutually interact, creating a pervasive net which has some serious consequences on the final list and on the computation of the syntactic distances. Guardiano et al. (2020a) advanced two potential types of parametric implication. The first claims that "due to a particular state of parameter A, no construction that could trigger parameter B is ever manifested in the extensionally generated language (there is no empirical evidence to set parameter B to either value)" (Guardiano et al. 2020: 153), while the second states that: "a particular state of parameter A necessarily produces surface consequences that are identical to those obtained when parameter B is set to a certain state (in fact, the learner does not make any real choice about B)" (Guardiano et al. 2020: 153).

In the remainder of this section, CD will be investigated relying on the notions hinted above. Therefore, the parametric value assignment will follow the PCM, showing the predictability of parameter valuation on the basis of the parameter values that have already been assigned. Additionally, the role of parametric implication will be outlined showing how it can delineate the pathway of parameter value assignment in a cross-linguistic fashion. Despite undertaking the PCM for the compelling results it reveals from an implicational perspective, a hierarchy-based approach will be employed to more straightforwardly visualize the relations among parameters. Although the macro- vs. micro-parametric distinction is fundamentally immaterial for the purpose of this analysis, it is reasonable to attribute a larger scale variation to the parameters at the top of the hierarchy and a narrower scope to the parameters stranded at the bottom.

6.2 CD and parametric implications

The realization of CD in Florentine, SI and Pisano is likely to involve (at least) four parameters as listed below:

(19) a. PC1 (CCD)[12]: is CD attested?
b. PC2 (CDA): is CD attested with all possible combinations of selecting and embedded verb?
c. PC3 (CNI): is CD attested with non-bridge selecting verbs and with irrealis embedded verb?
d. PC4 (CBI): is CD attested with bridge selecting verbs and with irrealis embedded verb?

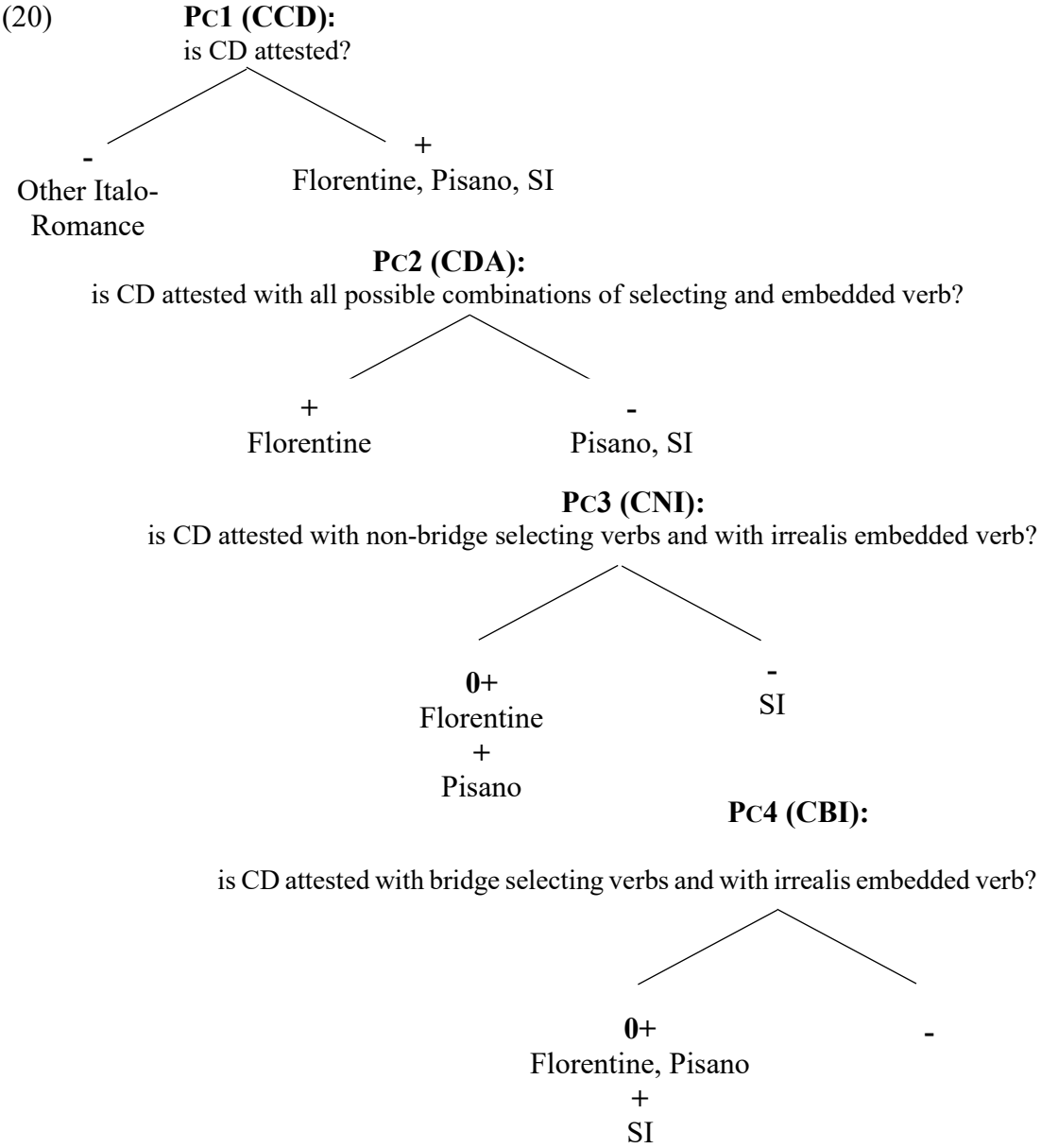
The four parameters listed in (19) enable to capture the micro-variation described in Section §5. As a matter of fact, PC1 (CCD) regulates whether complementizer drop ever takes place in the language under analysis, hence distinguishing between SI, Florentine and Pisano on the one side and all other Italo-Romance varieties on the other. Indeed, despite the micro-variation described above, CD remains a quite restricted phenomenon cross-linguistically, it being rejected in most Italo-Romance dialects. Subsequently, PC2 (CDA) portrays the case of Florentine where CD2 takes place, compatible with all combinations of main and embedded verbs. Conversely, SI and Pisano negatively label PC2 (CDA), given the more restrictive conditions they show in the realization of CD. PC3 (CNI) is a finer-grained parameter regulating CD3, that, as described at length in the previous sections, minimally differ from CD2 in ruling out the most extreme combination of main and embedded verb, that is non-bridge selecting verb and realis embedded verb. Therefore, the verbal pattern described by PC3 (CNI) instantiates CD3 and, as such, this parameter is positively set in Pisano. On the other hand, SI provides a negative value as well, being characterized by more rigid conditions concerning the verbal combination. As for Florentine, it does not simply positively label PC3 (CNI), but the value assigned to PC3 (CNI) can successfully be neutralized by the value provided for PC2 (CDA). Since PC2 (CDA) encompasses all the possible combinations of main and embedded verb, whereas PC3 (CNI) comprises only a subset of them, it is reasonable to assume that whenever the former is positively labelled in a language, the latter is as well. In other words, if Florentine lexicalizes CD with all the combinations of main and embedded verb, also one instance of this combination is borne out. In line with the PCM, PC3 (CNI) receives the value 0+ in Florentine, meaning that it is predictably positive due to the specific value assigned to another parameter, namely PC2 (CDA). Ultimately, PC4 (CBI) regulates the most restrictive type of complementizer omission, that is CD1, encountered in SI thereby assigning a positive value. Regarding Florentine and Pisano, a comparable parametric implication as described hitherto can be postulated. As for Florentine, the implication functions in a manner akin the relation between PC2 (CDA) and PC3 (CNI), since PC4 (CBI) also instantiates a sub-set of the possible verbal combinations. Concerning Pisano, the parametric implication mirrors the structural constraints imposed by locality; as explained in Section §5.3, CD1 is lexicalized in Pisano owing to the verbal movement towards the adequate functional head within the split. Since the verb can reach up to the intermediate projection within the split provoking CD3, it consequently passes through the lower head in charge of CD1, resulting in the realization of CD1 in Pisano as well. Resting on this implicit structural

[12] This annotation mirrors the previous applications of the PCM; each parameter (P) is identified by a letter (C) standing for the domain of analysis, that is the complementizer phrase in this case, and by a number. Moreover, each parameter is associated with a three-letter code with permits a more clear-cur retrieval of the parameter within the whole list.

account, the parametric implication between PC3 (CNI) and PC4 (CBI) can be formulated, whereby if the former is positively labelled, the latter is positive as well. Therefore PC4 (CBI) receives the value 0+ in Pisano:

The interaction among the parameters in (19) is hierarchically represented in (20):

(20)



The hierarchy in (20) represents the tripartite distribution of CD and the parametric implications established which permit to properly assign parameters values and to downsize the portion of active parameters within the parameters list.

7. Conclusions

CD in Italo-Romance languages can be subsumed into three distinct types, CD1, available in standard Italian, CD2, present in Florentine and CD3, representative of Pisano. All these types of complementizer omission emerge from the movement of the embedded verb throughout the left-periphery. More precisely, assuming the 'Split Hypothesis', each CD type is structurally represented in a dedicated left-peripheral head where the embedded verb raises to. According to a major locality principle, the HMC, the movement of the verb is also in charge of the occurrence of CD1 and CD3 in languages that lexicalize CD2 and of CD1 in languages presenting CD3. Indeed, the verb cannot move throughout the left-periphery skipping some intervening heads. Therefore, whenever the higher projection is targeted, the verbal head must pass through all the intermediate intervening positions. Ultimately, the implicational relation among CD1, CD2 and CD3 can be thoroughly captured by the PCM, specifically by the array of parametric implications it implements.

Acknowledgments

I would like to express my gratitude to the reviewers for their insightful comments, which significantly enhanced the manuscript. Any remaining errors are solely my responsibility. I also extend my thanks to both the audience and the organizing committee of LSRL54 for organizing the event. This research was funded by a Trust International Scholarship from the University of Cambridge.

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