

The Person Case Constraint as a Treegrowth Property

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Abstract

In recent years processing considerations have increasingly been argued to play a central role in shaping syntactic properties of natural language (Hawkins 1994, 2004, Phillips 2002, Kempson et al 2001, Cann et al 2005). In this paper we address a putative problem for such a perspective, the Person Case Constraint (PCC), taken uncontroversially to be an irreducible morpho-syntactic constraint on clitic pronoun combinations. Within minimalist accounts, there are a range of PCC analyses purporting to confirm blind syntax and need of feature-driven movement, none of them unambiguously successful. In this paper, we adopt the Dynamic Syntax (DS) perspective of Cann et al 2005 in which syntax is defined as the monotonic incremental growth of semantic structure; and we argue that the PCC is wholly due to tree-growth restrictions on how interpretation is built up following the dynamics of processing. The languages of primary focus are Spanish, Greek, and Romanian. Within DS, scrambling has been analysed as the implementation of parsing strategies inducing nodes in the emergent structure that may be temporarily unfixed in such partial structure, with update provided by the later processing of the verbal complex (Cann et al 2005). Relative to this background, we argue (along with Bouzouita 2008) that clitic pronouns encode calcifications of such processing strategies (Cann and Kempson 2008, Bouzouita 2008). We then argue that the PCC is wholly explicable as the consequence of a tree-logic restriction that only one unfixed node can be present in a tree at any stage in the tree growth process, systematic absences from clitic-pronoun templates being due to this restriction. Counterexamples to the PCC are analysed in terms of clitic homonymy in the individual grammar, eg ethical datives in Spanish; and we argue that this holds universally, with the supposed weak PCC also being due to emergent homonymy sensitive to individual verb-forms. We conclude that the PCC provides surprising confirmation that syntax, as the core of universal grammar, is grounded in a processing perspective.

1. Introduction

Clitic pronouns continue to pose a major challenge for current linguistic theories. Not only do they occur, in many languages, in a noncanonical relatively early position, at least in indicative verbal forms; but in such a position they cluster together in a way that does not, at first sight at least, seem to be echoed elsewhere in the grammar. There have been informal observations (Martins, 2002) that their

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positioning reflects earlier word order patterns in some source language (e.g. the Romance clusters echoing constituent order preferences in Latin), but with linear order having no status in the strictly hierarchical formulations favoured in most syntactic frameworks, this observation is not matched in the syntactic characterisation of clitics. Latin, the source language, is well-known for its extremely liberal word order, which at least superficially seems to allow all possible orders, at least in simple clauses and to some extent beyond this limit. So, if this diachronic perspective is to be pursued, it might suggest that ANY possible ordering of clitic pronouns would be available. But this is very far from the case: clitic sequences tend to be rigidly ordered. There is in fact a great deal of variability even within single language families. French, like other Romance languages, requires first and second person pronouns in a clitic cluster to precede a third person pronoun:

- (1) Il me l' a donné
He me it.CL-ACC has given
He gave it to me

But, unlike all other Romance languages, in third person combinations, French idiosyncratically imposes an ACC-DAT ordering, an ordering which is preserved following the imperative form:

- (2) Il le lui a donné
He it.CL-ACC him.CL-DAT has given
He has given it to me

- (3) Donnez le lui
Give.IMP.SG. it.CL-ACC him.DAT
Give it to him

This ordering is not replicated in any other Romance language at least for 3rd person clitic combinations:

- (4) Glielo ha dato
them.CL-DATit-.CL-ACC has given
He/She has given it to them [Italian]

- (5) Selos ha dado
them.CL-DATit-.CL-ACC has given
He/She has given it to them [Spanish]

With such apparently arbitrary variation, one might deem that this is nothing more than low level variation emerging from factors that are unfathomable but not sufficiently structural to be of interest, hence simply to be listed, language by language. And, given the sometimes marked idiosyncrasy of the realisation rules for what are perfectly regular morpho-syntactic combinations, this move has seemed to some to be justified, a view that might seem to be confirmed by the fact that at least some clitic clusterings display marked lexical idiosyncrasies, as in Spanish, where what is syntactically a perfectly well-behaved pair of clitics conveying 3rd person plural indirect object plus 3rd person singular object gets realized as the form *selos* in which the plurality of the supposedly human goal is realized on the accusative suffix, with the properly preceding dative marked by the impersonal and plurality-neutral *se*. With morphophonology seen as interpretive of a core syntax component, if a syntactic account of clitics is to be sustained, such idiosyncratic realization has to be defined as applying to the output of whatever syntactic processes determine clitic ordering (see Bonet 1995); and this has led to the assumption by Bonet and others (Heap, 2005) of a distinguished component of morphology, fed by syntax and feeding into phonology, but independent of both, defining, amongst other things, templates of morphological sequences and their realization.

However, the position of clitics relative to each other is far from random. There are a number of co-occurrence restrictions which, despite resisting any obvious principled explanation, are nonetheless exhibited across an extremely broad array of clitic-pronoun displaying languages. Chief among these is the so-called Person Case Constraint (PCC), providing, so it is argued, evidence for a feature-based account, and, more specifically, for noninterpretable features, hence for the Minimalist program. Descriptively, the PCC bans any combination of a dative clitic with a first or second person accusative clitic:

(6) **Person case constraint** : If DAT, then ACC(ABS) = 3rd (Bonet, 1991).

According to this categorisation, all combinations of first and second person clitics are excluded (as one of these will be dative), as well as first or second person construed as accusative put together with a third person dative. Thus, right across the Romance languages and well beyond, one finds combinations of 1st/2nd person (construed as) dative with 3rd person accusative:

(7) Me lo ha dato
 me.CL-DAT it.CL-ACC has given
 He/She has given it to me [Italian]

(8) Me lo ha dado
 me.CL-DAT it.CL-ACC has given
 He/She/It has given it to me [Spanish]

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- (9) Mu to exi dosei
me.CL-DAT it.CL-ACC has given
He/She/It has given it to me [Greek]

But there are no occurrences of 1st/2nd person construed as accusative with 3rd person dative. As stated, this restriction would also apply to first and second person pronominal clitics occurring together, and in many languages these are also debarred, as witness French and Greek:

- (10) *Elle vous m' a présenté
he you.PL me has presented
He has presented me to you [French]

- (11) *Mu se exi dosei
meCL-DAT you.CL-ACC has given
He/She/It has given you to me [Greek]

However, in a nontrivial subset of these languages, combinations of 1st/2nd clitics are licensed, at least with some verbs and for some speakers; and it is only the combinations of third person dative with either of 1st/2nd person construed as accusative that are debarred. Spanish, Italian and Catalan follow this pattern:

- (12) Te m' ha recomanat la Mireia
you.CL me.CL has recommended the Mireia
b. Mireia has recommended you to me (or me to you) [Catalan - Some speakers]

- (13) Te me presentaron
me.CL you.CL presented
They introduced you to me (or me to you) [Spanish - Some speakers]

- (14) Mi ti ha dato
me.CL you.CL has given
He/She has given me to them [Italian - Some speakers]

- (15) *Gli mi ha dato
them.CL-DAT me.CL has given
He/She has given me to them [Italian]

- (16) *Le me ha dado
 him.CL-DAT me.CL has given
 He/She has given him to me [Spanish]

Finally, there are yet further variants: of the Romance languages, it is Romanian in which it is only the first person pronoun which is rigidly restricted, a matter to which we return.

One or other of these constraints is found in a wide range of genetically unrelated languages spanning Romance, Bantu, Caucasian, Tibeto-Burman families, and the list continues with exemplars from yet other families (Greek, Basque Algonquian, Warlpiri). If co-occurring clitic forms are no more than possible morphological listings in the repository of the idiosyncratic, the lexicon, such gaps are wholly puzzling. Yet tantalisingly, in each such family, nonetheless, the constraint is not displayed by every member of the family as already noted in Romance; and, even within languages reported not to observe either one of these constraints, there is very widespread disagreement between individual speakers as to how general the availability of such otherwise prohibited pairings really is (See Ormazabal and Romero, 2007 for the relevant discussion for Spanish, Bonet, 2007 for Catalan, Cardinaletti and Shlonsky, 2004; Bianchi, 2006 for Italian). So, though there is systematicity to the restriction, given the cross-language prohibition, a typological generalization would be inappropriate. And, confirming this, whatever form the generalization takes, it must nonetheless allow for widespread variation even, possibly, within an individual language-system.

Adding to the elusiveness of any basis for such distribution, there does not appear to be a principled interface explanation for these gaps (Monachesi, 2005). Semantically, for example, it is a well-known fact that substituting one of the two clitics of the illicit cluster, grammaticality is restored, a fact noted in the literature as a repair (Bonet, 2007; Rezac, 2007, among others):

- (17) Me sistisan se sena
 me.CL-ACC introduced to you.ACC
 They introduced you to me [Greek]

- (18) Je t' ai présenté à lui
 I you.CL have introduced to him
 I introduced you to him [French]

For some, the failure to find any such basis from interpretational considerations, is taken to confirm the need for an independent component of morphology (Bonet, 1991, 1994; Heap, 2005). Within minimalism, resisting this move, such failure of any straightforward correspondence with some identifiable interpretable feature has been taken as evidence for uninterpretable features, and more. Indeed the Person Case Constraint has been used as data to bolster core minimalist concepts, otherwise argued to be problematic. Amongst these are the concepts of 'Minimal Move' or 'Last Resort', which have been the

subject of severe criticism as requiring transderivational considerations in the evaluation of wellformedness whose formal power is notorious (Johnson and Lappin, 1999). Taking up such criticisms, Rezac (2009) rightly acknowledges the weakening of the explanatory force of the formalism itself which any such mechanism opens up. Nonetheless, Rezac argues, the PCC poses just one restricted case where a subcomponent (that of syntax) has to be seen as intruding into morpho-phonological mechanisms, and specifically with respect to uninterpretable features. For Rezac indeed, the transderivational concept of repair is directly reflected in the core grammar as the heart of the explanation of PCC constraints and the way a language can sidestep them, a debarred feature-complex having to be repaired by the deletion of the uninterpretable [+person] feature and addition of a case specification, transforming a pronominal clitic into a nonfocussed strong pronoun.

In this paper, we argue that the Martins observation is correct, and that the clitic systems of Romance, by way of illustration, are indeed a calcification of strategies that in the earlier source language of Latin were strategies for on-line processing which over time became encoded in association with individual clitic forms. The PCC is an echo of the limits of freedom available to such strategies, the combinations excluded being impossible combinations of such strategies. Making sense of the Martins observation and the concomitant restrictions, however, requires a shift of perspective into defining grammar formalisms as projecting the growth of representation of content, over which the necessary restrictions can be defined. Processing operations involve partial tree relations; and the PCC effect is a consequence of strict limits on the availability of such strategies. Furthermore this constraint is an immediate consequence of logical properties of trees, once growth of trees is defined across partial trees. Put simply, it is a definitional property of trees that every node is uniquely identifiable in a tree in virtue of its relations to every other node in a tree. Once partial tree relations are brought into the picture, with relatively weak characterisations solely in terms of dominance, this tree-logical truth extends also to weakly specified tree relations: no two tree relations characterized solely as dominated by some node ϕ can be kept apart – they will stand in exactly the same relation to other nodes in the tree to which ϕ itself is related, and so will invariably coincide. Accordingly no such underspecified tree-relation can be constructed twice with incompatible decorations. And the cases falling under the Person Case Constraint, so the account will go, are precisely such cases. This would seem to debar any possibility of exceptions. However, this is an arena of language change, with emergent homonymies. Cases, then, which appear not to be debarred, as in languages observing the weaker forms of the PCC, may thus be licensed in virtue of the language having developed an alternative account of the tree relations in question, only one of which constitutes an underspecified encoding of the contribution made by the case marking clitic, involving, say, an adjunct relation, so that instances which superficially appear to violate the constraint, may, in fact, be fully consistent with it. So the explanation both of clitic clusters and their constraints will be essentially syntactic, but with a twist, as the structural explanation to be provided makes essential use of the GROWTH of representation of content to be attributed to the string. Moreover, the net result is an account that involves no explosion of power in the grammar formalism itself, being grounded only in the core notions of structural growth.

1.1 *The accounts proposed*

The literature on the PCC is extensive. In this section we review some of the recent accounts regarding the PCC to see the complexities involved in trying to define the restrictions in question solely with respect to static properties of individual configurations.

There are four primary types of position which protagonists adopt. There are (i) those who think the problem is epiphenomenal merely one of non-occurrence of data through scarcity of need to express the relations in question (Haspemath, 2004) and so little more than a sociological phenomenon. There are (ii) those who think it is a morphology-internal problem, and hence motivation for a discrete component of the grammar entirely separate from either syntax or semantics, and to be explained in terms purely of feature-geometry and occurrence at some position within a morphological sequence (Bonet, 1991, 1994; Heap, 2005). There are (iii) those who argue for a primarily syntactic argument, seeing the evidence of such systematic cross-linguistic, indeed cross-language-family gaps in the morphological paradigms, as requiring a grounding in formal principles of the grammar architecture (Rezac, 2003; Anagnostopoulou, 2003, 2005; Adger and Harbour, 2007). And finally, there are (iv) those who argue that it is a morphology-specific issue, but in so far as such morphological features are critical to distinguishing different forms of movement (those that are feature driven and those that are not - Ormazabal and Romero, 2007), there is interface with syntax. Given the significance of the PCC data to evaluation of the minimalist program, it is these two latter types of account that we primarily survey here.

1.1.1 *Minimalist accounts of the PCC*

Of the minimalist accounts, Rezac (2003,2008), Anagnostopoulou (2003,2005), Adger and Harbour (2007) are in agreement that the PCC is the result of inability of feature checking to occur in virtue of some conflagration of features arising through intrinsic properties of the clitics in question and attendant merge or other processes that operate to determine their derivation. In the case of Anagnostopoulou (2003, 2005) clitics enter into an agree relation against one functional head. The PCC then arises assuming first that the head F which is the head that agrees with the clitic's feature cannot value each of its features more than once. To this must be added the assumptions which Anagnostopoulou makes with respect to the features different clitics carry. A clitic-relevant projection with a functional head F is assumed against which number and person features have to be checked. Dative clitics are then assumed to have person features but no number features. 1st/2nd person accusative clitics on the other hand have person and number features. And, finally, third person accusative clitics only have number features (and crucially not a person feature - despite their construal). Assuming, then, by general principles, that the dative clitic will have consumed the person feature of the F head, a first or second accusative clitic will not be able to do the same for its person feature. In that respect, the person feature will remain uninterpretable and the derivation will crash. No problem arises for 3rd person accusative clitics since there is no person feature needing to be checked in this instance. Rezac (2003) on the other hand makes the assumption that feature checking failure is due to dative intervention and not the inability of the head to check a feature twice. In Rezac's account, a 1st/2nd person feature must be licensed via an agree relation. In a PCC structure no such relation can be established due to the intervening dative. For 3rd person accusative clitics no such relation must be established. Adger and Harbour (2007) in a similar

vein, argue that the participant features of 1st/2nd person accusative clitics are responsible for the PCC: 1st/2nd person accusative clitics, being the direct objects, are licensed inside the APPL head (with VP being the complement of APPL). SPECAPPL on the other hand, bears participant features due to animacy restrictions associated with indirect objects. The following generalization is proposed:

(19)

Adger and Harbour's Generalization

The requirements which a functional head requires its specifier to bear cannot be used as probes in the head's complement domain.

A first/second person accusative clitic is excluded in the presence of an APPL head (i.e. in ditransitive constructions) since the participant features of these clitic forms will remain unchecked assuming that the specifier of APPL will always bear a participant feature. Assuming that direct object clitics check their features against the APPL head, a first/second person direct object clitic will not be able to check its participant features given (19). Since the specifier of APPL bears participant features, these features cannot be used as probes in the complement domain, hence the impossibility of checking the participant features of direct object clitics in the complement domain of APPL, hence the PCC.

The first thing one notices about all the latter analyses is that their actual basis turns on the decision one makes regarding which clitics have which features, each of which in principle has to be checked. For example, if it is assumed that third person accusative clitics have person features (as in Bianchi, 2006; Nevins, 2007), no clitic sequences will ever be made possible. The question is whether the posited features really exist and, if they exist, what the motivation is for the proposed specifications. For example, there seems to be no principled reason why it is that third person dative clitics should be characterized as bearing a [-person] feature whereas third person accusative clitics should not bear any such feature (Anagnostopoulou 2003;2005), other than the fact of matching the distributional idiosyncrasy with some supposedly general mechanism. It is not clear to us what is the exact difference between a [-person] feature, i.e. the negative specification of a feature, and the total absence of such a feature. The same technique is used in Adger and Harbour (2007) where third person accusative clitics do not bear participant features while 3rd person dative clitics do, though, crucially, these features are unspecified. Furthermore, Anagnostopoulou (2003,2005) has simply to define post-hoc that dative clitics do not check their number features. According to her, dative heads are defective and as such their number feature is not accessible for checking. This claim is based on data from participial agreement languages where dative clitics fail to trigger this form of agreement contrary to accusative clitics. However, such evidence is not decisive as the pattern is only partial (pointed out in Bonet 2007: footnote 14), with Catalan participial agreement being possible with third person accusative clitics but not with first/second accusative clitics.

In addition, not all languages confirm some of the specific claims made so, at least, would require additional stipulation. Adger and Harbour (2007) assume that indirect objects always bear participant features. However, for languages like Modern Greek, this restriction does not hold, since a number

of constructions with an inanimate indirect object are perfectly grammatical – there is a tendency for indirect objects to be animate, but this fact remains not more than a tendency; it is certainly not a categorical restriction:

- (20) a. Tis eδose mia klotsia (tis kareklas)
 her.CL-GEN gave a kick the.GEN chair.GEN
 He kicked the chair
- b. Tis eδose mia klotsia (tis Marias)
 her.CL-GEN gave a kick the.GEN Mary.GEN
 He kicked Mary

So again, the feature assignment, though as a methodology taken to be an interface between syntax/morphology and interpretation, is in fact not grounded either in semantic or morphophonological motivation, and they remain brute stipulation. Examples where the doubled inanimate NP is not present are also grammatical. This should not be the case, according to [Adger and Harbour \(2007\)](#), since inanimate objects do not bear participant features:

- (21) a. A: Pos egin etsi to vivlio? B: Tu eδosa mia klotsia kata laθos
 how happened that the book it.CL-GEN gave a kick by mistake
 A: Why is the book like that? B: I kicked it by mistake.
- b. A: Pos ton xalases ton ipologisti sto grafio? B: Tu esteila enan
 how him.CL-ACC damaged the computer in-the office him.CL-GEN sent a
 io
 virus
 A: How did you manage to destroy the computer in the office? B: I just sent it a virus.

The same problem is reported by Bonet (2007: 25) for Catalan in discussing the same analysis (see also Chatzikiyiakidis, forthcoming, for relevant argumentation).

In this connection, we believe that even though a number of ditransitive constructions involving inanimates are somewhat degraded compared to the ones involving animate NP's, a generalization banning inanimates from ditransitive constructions is on the wrong track. What exactly is going on with these constructions is something that we do not know and the data are not clear cut. For example, there are a number of constructions involving inanimate indirect objects that are if not sharply ungrammatical, question mark grammatical. Substituting the genitive marked with the preposition *se* 'to' plus an accusative NP, the sentence becomes grammatical. The peculiar thing is that a genitive clitic can be used to refer back to the PP construction:

- (22) a. A: ??? Δ ose mia efkeria tis dimokratias B: Θ a tis δ oso
 give a chance the_{GEN} democracy_{GEN} FUT her._{GEN} give
 A: Give democracy a chance B: I will.
- b. A: ??? Δ ose mia efkeria sti dimokratia B: Θ a tis δ oso
 give a chance to-the_{ACC} democracy_{ACC} FUT her._{GEN} give
 A: Give democracy a chance B: I will.

Further research is needed in order to understand what is the exact correlation between animacy and double object constructions. It is clear to us however that a generalization grounded in some semantic property such as participanthood, however abstractly construed, like the one given by [Adger and Harbour \(2007\)](#), cannot be sustained. In that respect the assumption that all indirect objects are interpreted as animates is dubious at least for languages like Modern Greek.

[Anagnostopoulou \(2005\)](#) discusses the weak version of the PCC and argues that, in that case, multiple Agree with a functional head has to be posited contrary to canonical minimalist assumptions. However, an additional constraint has to be stipulated in order to exclude the *me-lui* cases. The proposed generalization bans multiple agree just in case the elements entering this agree relation have contradictory values, with the explanation lying in 3rd person dative clitics not being able to co-occur with first or second person accusative clitics since the former have a [+person] feature while the latter a [-person] feature. This is openly a stipulation, one that does the job and so observationally adequate, one might say:

- (23) **A condition on multiple Agree:** *Multiple Agree can take place only under non - conflicting feature specifications of the agreeing elements* ([Anagnostopoulou, 2005: 221](#)).

The above however does not have much to say about why such *me-lui* constructions are banned. And it is unclear what exactly counts as a conflicting feature specification. First and second person cannot have the same person specifications: they will both be specified as [+person] but additionally they must have something to distinguish between first and second person. If this is the case, then we cannot see why this further specification as first and second person does not constitute a conflicting specification. But if it does, then how is it that in some languages, other combinations are possible? The sense of seeking a principled explanation for why such restrictions emerge on a broad cross-linguistic basis (albeit with variants) is close to having become irrevocably lost. We appear to be searching for a feature stock that, in the event, gets extended language by language in an essentially post-hoc fashion.

1.1.2 *Ormazabal and Romero (2007)*

An alternative albeit related account is that of [Ormazabal and Romero \(2007\)](#). On their account, the PCC is dissociated into two distinct phenomena. The first is a universal tendency for object agreement to display sensitivity to animacy while the second is a restriction on multiple object agreement.

Ormazabal and Romero (2007) propose the following two generalizations:

- (24) **Object animacy realization:** *Object relations, in contrast to subject and applied object relations, are sensitive to animacy.*
- (25) **Object agreement constraint:** *If the verbal complex encodes verbal agreement, no other argument can be licensed through verbal agreement.*

The above two generalizations are argued to capture the complexity the PCC exhibits; and one of the Ormazabal and Romero (2007) predictions is that in clitic languages where the PCC is active, it should not apply to ethical datives. This is true for many languages, but again Greek is problematic:

- (26) a. Pai ke mu to δinei sto giorgo anti na to δosei se mena
 goes and me.-GEN it.ACC gives to George instead SUBJ it.ACC give to me
 'He gives it to George instead of giving it to me. (and I'm angry with that)'
- b. *Pai ke mu se δinei sto giorgo anti na se δosei se mena
 goes and me.GEN you.ACC gives to George instead SUBJ you.ACC give to me
 'He gives you to George instead of giving you to me.'

A further problem with the Ormazabal and Romero (2007) account is their characterization of the third person Spanish clitic *lo*. Since their second generalization does not allow two objects to agree with the verb, they argue for a non-agreement, determiner-like analysis for *lo* to explain the grammaticality of sentences involving two argument clitics, where the accusative clitic is *lo*. They use a number of examples to supposedly establish that *lo* does not agree with the verb, with data from doubling indicating that *lo* is indeed a different kind of clitic than dative or 1st and 2nd person accusative clitics: the latter can only double in particular environments, and when they do they must be interpreted as [+specific]. However, the account does not extend successfully to Modern Greek. The reason is that the equivalent Modern Greek clitic for *lo* can double at least the same phrases as do 1st/2nd accusative clitics, hence presumably agreeing with these in the relevant sense. The first two sentences are ungrammatical in Spanish, yet grammatical in Modern Greek:

- (27) a. To idame to spiti
 it.CL-ACC saw the house
 'We saw the house.'
- b. Tus idame merikus sto mayazi
 them.CL-ACC saw some in shop
 'We saw some of them in the shop.'

- c. Mas fantazomai merikus sti filaki
us.CL-ACC imagine some in prison
'I imagine some of us in prison.'
- d. Θa sas do merikus avrio
FUT you.CL-ACC see some tomorrow
'I will see some of you tomorrow.'

Furthermore, the specificity explanation for such cases is inapplicable, since even though some have argued that such a restriction holds of Modern Greek doubling constructions (Iatridou, 1995; Anagnostopoulou, 1997), there are plenty of sentences involving a bare quantifier plus doubling which do not exhibit any specificity effect or, optionally, exhibit a specificity effect:

- (28) a. Polus anθropus den tus enδiaferi
many people NEG them.CL-ACC care
'Many people do not care' (specific or non - specific).
- b. Mia kokini bluzα ti θelo afton ton kero
a red blouse her.CL-ACC want this the time
'I need a red blouse at this time of the year' (specific or non - specific).
- c. Merika pota ta pino apopse
some.CL-ACC drinks.ACC them.ACC drink tonight
'I would have some drinks tonight' (specific or non-specific).
- d. Mia bluzα θa tin a γorαza
one blouse FUT her.CL-ACC bought
'I would buy a blouse' (non specific only).
- e. Opjodipote τραγυδι tu to sfiriksis, θa to peksi
whichever song him.GEN it.CL-ACC whistle, FUT it.CL-ACC play
'He will play any song you will whistle to him.'

Similar observations are made by Kallulli (2000) arguing that CLLD does not encode specificity in Modern Greek and Albanian. The above examples from Modern Greek suggest that a determiner-like analysis of 3rd person accusative clitics loses its empirical support and, at least for Modern Greek, cannot be maintained, leaving the Ormazabal and Romero account unable to capture the PCC effects as displayed in Modern Greek.

1.2 *Rezac 2008*

Of all the analyses recently provided, it is Rezac (2008) which embraces the two-pronged risk of a feature-based analysis being uninteresting because too narrow a stipulation, on the one hand, and an empty analysis if too powerful a system is invoked, on the other. Nonetheless, he argues that the mismatch between the person feature required to express the PCC restrictions and either semantic or phono-

logical considerations is a bonus, as this necessitates an account in terms of an uninterpretable feature of [+person]. Like Adger and Harbour (2007), Anagnostopoulou (2003,2005), he promotes an account which involves A-movement of a [+person] feature, in his analyses as driven by an abstract KAPPA probe operator (notably specifically associated with clitics only and not with similarly specified full DPs - a problem he notes remains outstanding). What he takes as the challenge is that clitics in their clustered position are not simply complementary to lexical DPs in general, but, more specifically, with strong pronouns, these, like other full DPs not being subject to any such movement (despite the generality of that process). More particularly, given the formulation of syntactic case as associated with position in the configurational hierarchy, clitic pronouns within minimalism are not marked for case; and this then raises the issue of why strong pronominal case-marked DPs should be complementary to clitic non-case-marked elements. Addressing this challenge, Rezac defines the Person Case Constraint as a lack of moveability of a [+person] feature in virtue of a local intervener marked with the same feature, like Adger and Harbour (2007) with 1st/2nd person clitic pronouns and dative pronouns being marked positively for such a feature, with third person accusative pronouns not being so marked. Should such an intervener then lead to blocking of such obligatory movement, as driven by the optional and abstract kappa operator, a rescue operation is defined which determines that the dative clitic becomes a non-focused strong pronoun with the addition of a CASE feature. The details turn on defining the abstract Kappa operator plus its projection (which is to count as probe for movement of some locally accessible paired feature) and an additional process applying in the event of the clitic failing to move because of an intervener, whereby the clitic loses its uninterpretable feature and gains a case feature determining that it will be licensed in situ. This process is notably nonmonotonic, since it reverses feature specifications otherwise projected, and adds additional feature specifications, not present in the original computation. While this account is attractive in trying to bring together these complementary distributions, it is, thus, at a huge cost of power. Even relative to its own framework of assumptions, many details of the replacement of such uninterpretable [+person] features (or their absence in for example third person accusative pronouns) remain unaddressed. As with other analyses of this genre, the overall effect is one of an articulation of syntax which is motivated solely *sui generis*.

At the very least, the data realising the Person Case Constraint, together with the exceptions to it, cry out for more principled analyses of how it is that languages could allow such an opaque interface between string and interpretation while retaining some systematicity. And with all these feature-based explanations struggling to martial any explanation sufficiently comprehensive to match the cross-language systematicity of PCC effects while yet allowing for morphological variability, one is left with little more than the reflection that the hunt for a common element in the configurations which the individual languages display is a chimera. And, notably, none of these accounts even seeks to address the challenge of reflecting the earlier Martins observation about the Romance clitic pattern emerging from Latin as an echo of the constituent order variation in the earlier full NP-displaying language. The challenge then is whether there is any other grounding which could provide the basis for such an account.

2. A Dynamic account of the PCC

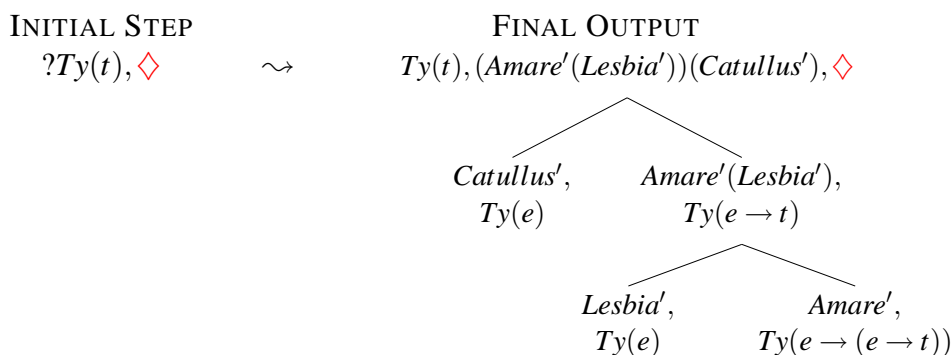
We now turn to explore the articulation of a direct reflection of this informal observation of Martins, using a framework in which, unlike conventional formalisms, the dynamics enabling interpretation to be

incrementally built up is central to the grammar formalism. And, we shall argue, the significance for the constraints on clitic systems of the type provided by the PCC is that exactly the range of alternative strategies for constructing interpretation over partial strings in such free word order languages is witnessed individually and severally by the array of pre-verbal clitics and clitic sequences, within the limits dictated by formal principles of tree growth (see Cann and Kempson 2008 for a preliminary sketch). So we turn now to the nature of mappings from alternative word orders onto a given semantic representation in Latin, by way of preliminary.

3. Grammars for Free Word Order languages: the case of Latin

The novel property of Dynamic Syntax as a syntactic theory is that the concept of structural underspecification and growth of interpretation intrinsic to processing is taken as the core syntactic notion, with syntax defined as a set of strategies for establishing the interpretation of words in the order in which they appear.¹ The process involves the incremental development of tree structures representing a semantic interpretation for a string which are decorated by labels reflecting interpretation. The starting point of the process is a tree with just a rootnode and a requirement to construct some propositional formula. The endpoint is a fully decorated binary branching tree structure encoding functor-argument structure, whose rootnode is the propositional formula established and whose daughter nodes are decorated by its sub-formulae.²

(29) Parsing *Catullus Lesbia Amavit* 'Catullus loved Lesbia'



The sequence of transitions across partial trees to yield such predicate-argument displaying trees is the sole basis of syntactic explanation: a sentence is defined to be well-formed just in case there is at least

¹ See (Marcus, 1981) for the basic D-tree grammar formalism, initially adopted solely as a formal grammar for parsers, being taken to be too liberal as it stood to warrant justification as a putative NL grammar formalism. However, with suitable restrictions, imposed in virtue of this being a system of procedures with operations defined over partial trees (rather than simply tree descriptions), the system can be shown to have the restricted flexibility of exactly the right order of liberality.

²*Fo* is a predicate that takes a logical formula as value, *Ty* a predicate that takes logical types as values, *Tn* a predicate that takes tree-node addresses as values, e.g. *Tn*(0) being the rootnode. In general we omit the *Fo* predicate in tree diagrams for simplicity. The \diamond is a pointer, indicating the node currently under development.

one possible route through that process that leads to a complete propositional tree.³ Computational and lexical actions are both expressed in terms of growth along any of the dimensions associated with decorations on the trees defined by the system. The only essential differences between computational and lexical actions are that the former are, without exception, optional and not triggered by particular phonological (or orthographic) input, while the latter are so triggered and the actions they determine must be run. In the lexical case, these take the form of macros of action sequences which relative to a triggering condition, induce tree-growth actions such as making tree relations, going to the node thereby introduced, decorating it with type and formula decorations as appropriate, etc. There is no one-to-one correspondence between word and node in the tree. Verbs, for example, project a macro of structure-inducing actions, applying to a proposition-requiring node as the input condition, so that the result of parsing the verb is the projection of a full, albeit skeletal, template of predicate-argument structure, with, in Latin, license to identify all such nodes either from context or from the construction process. Generation is defined in exactly the same terms. The informal intuition is that the very same rules of constructing representations of content apply in production as in parsing, the only difference between production and parsing being that whereas the parser may not know in advance the interpretation to be constructed, the producer in contrast must do so. Formally, partial trees constructed by the tree-construction device have an additional filter of having to display a subsumption relation between the partial tree so constructed, and some richer tree corresponding to a representation of intended content (Cann, Kempson, and Purver, 2007; Kempson et al., 2006).

Central to the modelling of the growth process, and in particular to the articulation of general tree-growth principles, is the logic of finite trees (LOFT: Blackburn and Meyer-Viol, 1994) with two basic modalities, $\langle \downarrow \rangle$ ($\langle \downarrow \rangle \alpha$ holds at a node if α holds at its daughter), and its inverse, $\langle \uparrow \rangle$. Function and argument relations are distinguished by defining two types of daughter relation, $\langle \downarrow_0 \rangle$ for argument daughters, $\langle \downarrow_1 \rangle$ for functor daughters (with $\langle \uparrow_0 \rangle$, $\langle \uparrow_1 \rangle$ as their inverses). There is in addition a relation called *LINK* which is used to define a transition between trees to be paired solely through sharing of formula decorations. Domination relations are definable, as is standard, through Kleene star operators, e.g. $\langle \uparrow_* \rangle Tn(a)$ for some node identified as dominated by treenode $Tn(a)$. Domination relations are equally definable over other operators: $\langle \uparrow_1^* \rangle Tn(a)$ picks out a functor spine; and we can then articulate compound concepts such as $\langle \uparrow_0 \rangle \langle \uparrow_1^* \rangle \langle \downarrow_0 \rangle Tn(a)$ that pick out a set of arguments for a given predicate (those between which the relation in question holds), and concepts of structural locality become straightforwardly definable.

These relations can then be used to define relatively weak relations; and it is these which are constructed as general tree-growth strategies. For example, structural underspecification can be defined in terms of licensing the construction of a node from some node α from which ONLY the relation of domination holds. Analogous concepts of underspecification can be defined for particular formula values, with metavariables $\mathbf{U}, \mathbf{V} \dots$ ranging over possible formula values. To achieve the dynamics of imposed growth, for any statement X , a corresponding requirement $?X$ is defined, with all requirements having to be satisfied for

³Quantification is expressed in terms of variable-binding term operators, so that quantifying NPs like all other NPs are of type e . The underlying logic is the epsilon calculus, the formal study of arbitrary names, with term-expressions whose internal structure is made up of an epsilon binder, ε , a variable, and a restrictor: e.g. $\varepsilon, x, Man'(x)$. Since in Latin, nouns project full specification of terms, the structure defined to be projected by *servum* would be a subtree of which the quantifying term is the topnode, dominating a subtree decorated with binder, variable, and restrictor specification. We leave all details on one side.

any successful output. In particular, all aspects of tree development that impose partial specifications are associated with a requirement for update; any constructed domination relation with $\langle \uparrow_* \rangle Tn(a)$ holding at a node is associated with a requirement for a fixed value at that node $? \exists x Tn(x)$; and, analogously for formula values, $? \exists x Fo(x)$ is the requirement imposed on a node decorated with some metavariable $Fo(\mathbf{V})$. Requirements may be modal, hence realizable at some later point in the derivation: for example case specifications. An accusatively marked expression projects onto the immediate argument-daughter node of some emergent predicate-requiring node the output filter that its mother node be of predicate type, $? \langle \uparrow_0 \rangle Ty(e \rightarrow t)$, a constraint which may be imposed at some early point (eg. in the processing of a left-placed accusative-marked noun phrase), but nevertheless not matched by the requisite type-decoration at that mother node until relatively late stages of the derivation. And so it is that within such a system of modally projected labeled binary branching trees representing content, structural, lexical and morphological constraints are all expressed in terms of possible forms of tree growth. This yields the consequence that what in other frameworks are taken to be morphological or syntactic properties requiring encapsulated modules, each with discrete vocabulary for expressing such properties, can, indeed must, in this framework be expressed as requirements on growth of semantic representation. There is a general constraint of monotonicity of tree growth; and, accordingly, internal consistency for any set of decorations on individual nodes. Furthermore, nodes being uniquely defined by their relative position to all other nodes in a tree, there can, by definition, only be one structurally underspecified relation of a type at a time, for any attempt to multiply nodes relative to one such relation can only yield a single tree node with its one uniquely identifying tree relation, albeit underspecified.⁴ It is this last constraint which, as we shall see, is central to the explanation of the PCC.

3.1 *Latin Scrambling*

The significance of this array of strategies for tree-growth update is that they can all be made use of to give the effect of free ordering of major constituents in a clause, in Latin as in other free constituent-order languages, with nodes for an emergent structure being able to be constructed in a range of linear orders, but subject to constraints imposed by such tree-growth limits.

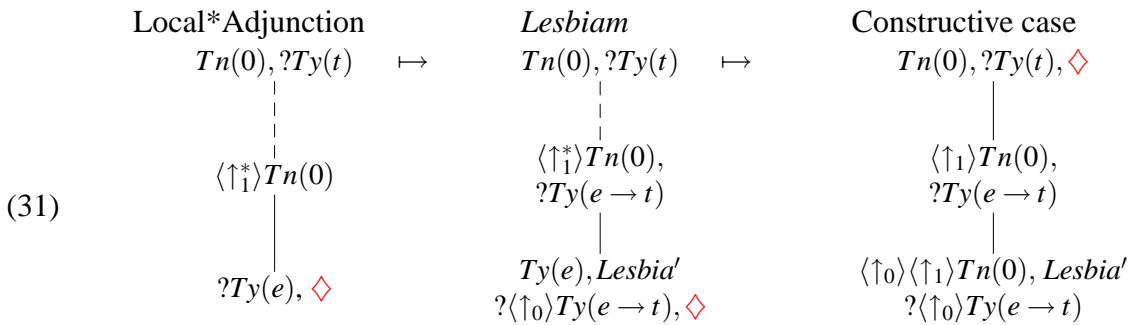
By way of illustration we take Latin, a very wellknown instance of a language with very free constituent order, with an indefinite number of NPs able to occur before the verb, and some cross-clausal scrambling in addition.⁵ The apparent storing up of argument nodes that can't obtain a fixed hierarchical position within the emergent tree until the skeletal template projected from the verb becomes available might seem to be incompatible with any tree-growth restriction imposing unique identifiability of nodes, even within trees displaying only weakly specified tree relations (it is certainly incompatible with psycholinguistic evidence of the incrementality of processing in verb-final languages (Ferreira and Yoshita, 2003)). However, this problem is resolvable by presuming on a constructive use of case whereby an output filter can be taken to trigger a process of structural enrichment so that a fixed relation is induced between the argument node in question and its containing dominating node. Object-identified nodes, for example, can be identified by this means. A locally unfixed node can be introduced and decorated with some

⁴This constraint holds because partial trees are in the model.

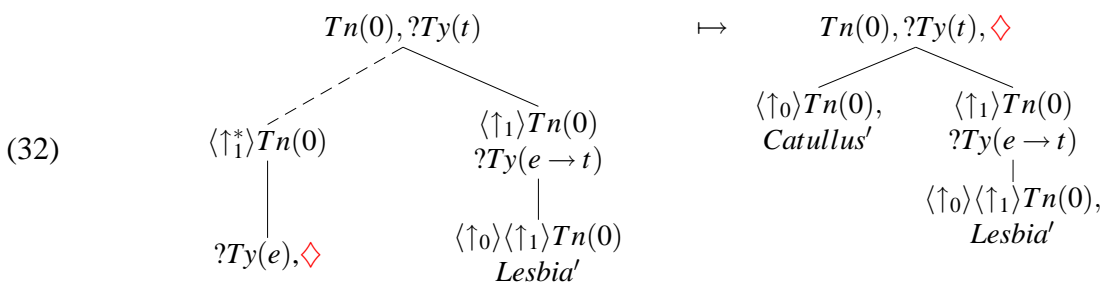
⁵ There are additional constituency freedoms that we do not address here, in particular the *hyperbaton* phenomenon whereby one structure can be construed as appositional to another without having to be adjacent to it.

formula value and an output filter requirement that its immediately dominating node be of predicate type (the characterization of accusative case); the relation of this node can accordingly be fixed immediately; and this move of enrichment can then allow the construction of a second case-distinguished node by the same means. Not only is such a sequence of steps an option; it is essential if a sequence of case-marked NPs is to be processed. Unless such a step of structural enrichment takes place, the two underspecified tree-relations would not be distinguishable; and they would be filtered out as an impossible development, given their inconsistent case specifications. So in processing (30) an opening sequence of steps might be as in (31):

- (30) Lesbiam Catullus amabat
 Lesbiam.ACC Catullus.NOM loved
 Catullus loved Lesbia



With this object-argument relation having become fixed via the steps as indicated in ((31)), a second step of constructing a locally unfixed node can now take place, commensurate with only one structurally underspecified relation being constructed at any one time, and the parsing of *Catullus* is, likewise, taken to fix the value of the underspecified tree relation of the node introduced to host the subject term, but this time as $\langle \uparrow_0 \rangle Tn(0)$, satisfying the nominative-induced requirement $? \langle \uparrow_0 \rangle Ty(t)$:



Quite generally, parsing a sequence of NPs prior to a verb may involve an arbitrary sequence of macros each involving the construction of a locally unfixed node and its immediate structural enrichment once suitably decorated. The actions of the verb then serve to fill out the remainder of the propositional structure to yield the appropriate output tree. The restriction that there can be only one unfixed node at a time remains satisfied, notably inducing a partial tree containing solely paired argument nodes, the development of such a tree constrained to ensure that these nodes constitute arguments to the same local predicate. And so it is that successful derivations to yield an interpretation of (30) can be built up incrementally.

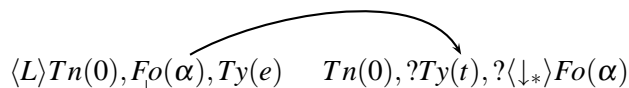
This is, however, by no means the only type of tree-growth sequence available for parsing initial NPs in a string. The first expression *Lesbiam* might be taken to decorate an unfixed node that is not constrained to be updated within a local domain (it is characterized by the $\langle \uparrow_* \rangle$ modality), the outcome remaining entirely unspecified, apart from the fact that it is within a given tree (and not across trees). In this case, by assumption, the case specification serves merely as a filter on update that is not immediately enriched to a fixed position, and in consequence no other unfixed node can be introduced by this step. As a discrete operation, the building of a locally unfixed node nevertheless remains available for the processing of some matrix subject NP that might follow (*Catullus* in (30)), this being constructed using the distinct modality $\langle \uparrow_1^* \rangle$.

Such a derivation, involving the construction of an unfixed node without locality constraint, is needed essentially for dependencies that are not local, and is the basis for modelling long-distance dependency:

- (33) Stercilinum magnum stude ut habeas
dunghill.ACC big.ACC ensure.IMP.SG that have.2.PS.SING
'See that you have a large dung hill'.

Within this framework, the availability of building this weaker structural relation thus opens up the potential for a richer set of effects, combining the two types of structural underspecification in a number of ways. In particular, the process which lacks the stringent locality restriction, being dedicated to creating an unfixed node at the opening stages in building up any type-*t*-requiring tree, can feed into the sequence of strategies used in parsing NP sequences within a local domain. If this combination of actions is adopted, a sub-tree can be built with a pair of arguments but without a predicate, that sub-tree itself remaining unfixed at this early stage of processing. Its fixed role in the hierarchy is characterized at some later stage in the update process by the standard tree-update mechanism for resolving long-distance dependency. The result is the predicted availability of pairs of NPs placed at the left periphery but constrained to occur locally relative to each other but across a possibly long-distance domain. These predicted structures constitute multiple long-distance dependency, a highly problematic type of structure for many other frameworks (problematic because the locality restriction of arguments relative to each other is only definable relative to the head, itself not locally available): ⁶

⁶On this analysis, we assume an account of prepositional phrases following Marten (2002), in which prepositional phrases function as optional arguments, and here we simply stipulate the relation of *supra terram* as being that of third argument for some upcoming predicate. Many details of the analysis are omitted here, including the way in which the effect of the

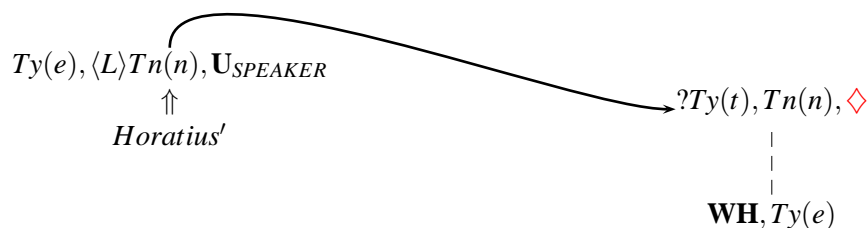


The significance of this process for the overall DS perspective is that it extends the range of devices for the processing of strings without the string itself necessarily displaying overt reflex of this additional alternative. For example, in a pro-drop language, such a linked structure may indeed be decorated with a term provided by a full NP, with the requirement that it be identified with one of the arguments of the subsequent structure. These can be satisfied by information provided by the verb, given its lexical actions assigning pronoun-like status to the arguments which it itself projects, hence without need of any morphologically explicit anaphoric device:

- (37) *quid mihi Celsus agit?*
 what me.DAT Celsus.NOM.SG do.3.SG.PRES
 ‘How, pray, is Celsus?’ (Lit. ‘What to me Celsus does?’)

In (37), parsing the interrogative *quid* may proceed via the construction of an unfixed node, subsequent to which, all computational actions being optional, one option is to construct a node LINKed to the main propositional node with the requirement to construct a term ($?Ty(e)$). The dative pronoun is parsed and the node is decorated with a metavariable constrained to be substituted by a term that denotes the speaker (see (38)).⁸

- (38) Parsing *quid mihi*



By assumption, in this context, the term projected by *mihi* and identified as picking out the speaker, here assumed to be Horace, is not in this ‘ethical dative’ use associated with a case constraint to find an indirect-object function for the term so constructed (a polysemy effect which we shall see persists in Spanish). Once this LINKed structure is duly decorated, the pointer will return to the primary structure, and the parse of the main clause can be continued.

The consequence of this flexibility is that there are a number of moves available at any stage of a parse sequence, in particular in the early stages when so little structural specification is as yet determined:

⁸In this analysis, no term is shared between the LINKed structure and the main proposition, making it like an analysis of gapless topics in languages like Chinese (see Wu, 2005).

(i) the building of a locally unfixed tree relation immediately updated; (ii) the building of a locally unfixed relation left as but an output filter; (iii) the building of paired argument nodes restricted by the requirement of there being local arguments to a single predicate; (iv) the building of a LINK relation to a node in some externally licensed linked tree. It is this set of strategies which we claim constitutes the domain of update actions out of which clitic pronouns each illustrate one strategy.

3.2 The Historical Shift from Free Order Languages to Clitic Clustering systems

The account so far set out has not yet established any causal chain between the processing strategies supposedly associated with Latin free word order effects and clitic distributions in subsequent Romance languages. In particular, nothing so far has apparently been of relevance to the early positioning of both individual clitics and any cluster of such clitics. It is not the purpose of this paper to argue for this in detail (see Bouzouita (2008a,b), but it is notable that this positioning corresponds to a tendency for anaphorically established expressions to occur before non-anaphoric ones, which is widely displayed in all free positioning subsystems of language. Cann and Kempson 2008 argued that this ordering, as displayed in Latin, has pragmatic underpinnings in virtue of an ever-present need to keep context search for construal of anaphoric expressions as small as possible (following Relevance Theory assumptions (Sperber and Wilson, 1995)). This prevalence of relatively early placement of anaphoric expressions became routinely associated with the specific structural environments inducing this effect, and so came to be routinized in Medieval Spanish as the trigger for the actions associated with the individual clitics or clitic sequences, in tandem with the routinization of the update actions that freedom of ordering in principle made available (Bouzouita: 2008a,b). All such routinizations themselves are indicative of the same minimizing of cognitive effort principle (Sperber and Wilson, 1995), since routinizations bypass the need for selection amongst possible parse strategies that is indicative of a relevance-induced constraint. With the progressive atrophying and subsequent collapse of the case system for all except personal pronouns, it is ONLY the items marked morphologically as case-marked that can be associated with projection of output filters or corresponding constructive-case update actions yielding successive construction of fixed structural relations before the processing of the verb. So, as Bouzouita(2008a,b) argues, it is these lexical units that, through regularly repeated use, came themselves to induce the tree-update actions that not merely decorated some suitably constructed node in an emergent tree, but also themselves projected the tree growth actions necessary for such decorations. Accordingly, leaving details aside, we pro tem adopt the uncontroversial assumption that the clitic expressions came through progressive phonological atrophying to be taken to warrant separate lexical specification. We also adopt the assumption that the tree growth update actions induced by any one clitic is, in the regular case, just one individual sequence of actions amongst the options that had been generally available at some earlier stage in a preceding language (i.e. non-ambiguity is the default), the range of such clitic update actions being expected to match the range of strategies available to yield free word order effects. Our concern here is with the outcome of such routinization effects, not the progressively established shifts whereby such encodings emerged (see Bouzouita 2008 for detailed analyses of the shift from Medieval Spanish through to Modern Spanish).

3.3 *The Strong PCC version*

With this assumption of a least-effort induced diachronic shift in place, the PCC becomes an immediate consequence of entirely general tree-growth principles. Recall that in virtue of nodes in a tree being uniquely identified by their relation to other nodes in a tree, it is a general property that two putative instances of an underspecified relation are indistinguishable and so collapse, any incompatible set of decorations then being debarred as a form of growth. Hence in any well formed sequence of partial trees, there can never be more than one underspecified relation of a type at a time.

From this limitation on tree growth, the PCC follows in total. All cases of clitic pronouns which merely induce the construction of a locally underspecified relation cannot co-occur. Amongst these, any expression morphologically encoding a dative specification might be said to constitute such a case, if it is not to be simply listed as homonymous across all usages in all languages. The dative notoriously shifts between having argumental status for some predicates, and adjunct status for others. Seeking then to characterize what that case specification itself intrinsically specifies, independent of the particular contexts in which it occurs, has to be in terms of a type specification which does not fix argument or adjunct status. The effect is that dative, not being syntactically fully fixed in its type, cannot in and of itself induce a fixed structural relation. This weak relation can only be definitively updated when the verb is parsed. A similar problem confronts any syncretic case specification. 1st/2nd person specifications, which in almost all Romance languages fail to provide morphological forms that distinguish accusative and dative, can only be seen as projecting some structural relation which is locally underspecified, unless they are taken as projecting homonymous forms without any attempt to match the syncretism in the analysis. The accusative clitic *lo*, on the other hand, being non-syncretic, can be analyzed as providing the basis for immediate update of the locally unfixed node which it may decorate to the direct object structural relation. Putting the latter assumptions together we get the strong PCC facts. A first or second person accusative will never be able to co-occur with a dative clitic in a clitic sequence, since both of the two clitics will project a locally unfixed node with no possibility of immediate update. As already mentioned, nothing prevents a structural process of introducing a node with an underspecified address twice, but this very underspecified address will ensure that only one node is constructed by the duplication of these processes. This in its turn will ensure that both dative and either first or second person, or the combination of first and second person, should never occur within a clitic cluster, as they will carry incompatible formula values and hence never achieve a wellformed result. The entries for *me/te*, *le* and *lo* in Spanish are shown below:

(39) Lexical entry for *me/te*

```

IF      ?Ty(t)
THEN   IF    [↓1+?Ty(x)
        OR
        IF    Mood(Imp)
THEN   make(⟨↓1*⟩);go(⟨↓1*⟩);
        make(⟨↓0⟩);go(⟨↓0⟩)
        put(⟨↑0⟩⟨↑1*⟩?Ty(t));
        make(⟨↓0⟩);go(⟨↓0⟩)
        put(Ty(e), Fo(USpeaker'/Hearer'), ?∃x.Fo(x))
        put(?∃x.Tn(x), gofirst(?Ty(t)))
ELSE   Abort

```

(40) Lexical entry for *le*

```

IF      ?Ty(t)
THEN   IF    [↓1+?Ty(x)
        OR
        IF    Mood(Imp)
THEN   make(⟨↓1*⟩);go(⟨↓1*⟩);
        make(⟨↓0⟩);go(⟨↓0⟩)
        put(⟨↑0⟩⟨↑1*⟩?Ty(t));
        make(⟨↓0⟩);go(⟨↓0⟩)
        put(Ty(e), Fo(UMale'/Neuter'), ?∃x.Fo(x))
        put(?∃x.Tn(x), gofirst(?Ty(t)))
ELSE   Abort

```

(41) Lexical entry for *lo*

```

IF      ?Ty(t)
THEN   IF    [↓1+?Ty(x)
        OR
        IF    Mood(Imp)
THEN   make(⟨↓1⟩);go(⟨↓1⟩);
        make(⟨↓0⟩);go(⟨↓0⟩)
        put(Ty(e), Fo(UMale'/Neuter'), ?∃x.Fo(x));
        gofirst(?Ty(t))
ELSE   Abort

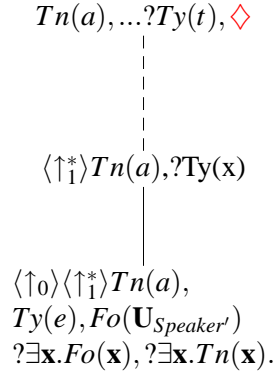
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Let us comment a bit on the entries. Notice that two embedded IF restrictions are posited. The first one ‘[↓₁⁺?∃x.Ty(x)’ will ensure proclisis. Let us see why. What this statement captures is that the clitic cannot be parsed in case any of the functor nodes bears a type value, a fact that will be true only if a

verb has already been parsed⁹. The second trigger 'Mood(Imp)' encodes the presence of an imperatival feature in the type t requiring node as its trigger. This trigger will effectively capture enclisis with imperatives¹⁰. If one of these two restrictions are satisfied, then we proceed to the actual actions induced by clitics. In the case of *me/te*, or *le*, a locally unfixed node is projected and is decorated with a type value and a formula metavariable carrying person presuppositions denoted as subscripts in each case. On the other hand, *lo* projects a fixed structure. It builds the functor node and the argument relation from that functor node, and decorates the argument node so constructed with a type value and a formula metavariable.

With the above entries in mind, let us see how the PCC is derived in the system. Let us take the sequence *me-te*, which according to the strong version should be ungrammatical. After parsing *me* we get the following structure:

(42) After parsing *me*

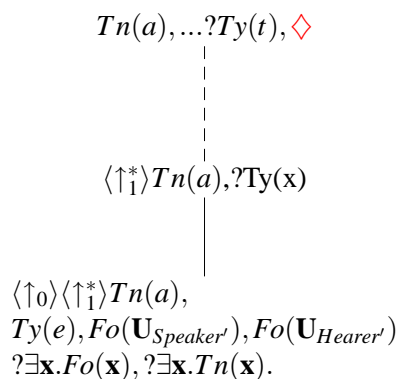


Then *te* comes into parse, projecting another locally unfixed node. However, the two unfixed nodes collapse into the same node by means of treenode identity. The result is one unfixed node with the following decorations:

After parsing *te* in *me-te*:

⁹The restriction formally reads: All functor nodes below me bear a type requirement. Assuming that when a type value is going to be projected, the equivalent requirement will be eliminated, if one of the functor nodes does not bear a type requirement then this would mean that a verb has been parsed. Note that such a restriction will be true even if no nodes exist below the initial node. This is due to the universal modality denoted as square brackets. Following standard assumptions in Classical Logic, a universal statement will be true in the presence of an empty set.

¹⁰Note that no serious account of imperatives is involved here. The imperatival feature is used here for illustration purposes. A proper analysis of imperatives within the DS framework is pending



We now end up in a situation where the two clitics decorate the same node. This will basically mean that when the unfixed node gets fixed, the two clitics will end up having the same argument position. The parse will never be successful since update of the two metavariables, $\mathbf{U}_{Speaker'}$, $\mathbf{U}_{Hearer'}$, won't be possible. Assuming that the $\mathbf{U}_{Speaker}$ metavariable gets updated by a compatible value standing for the speaker, the \mathbf{V}_{Hearer} metavariable standing for the hearer will not, and vice versa. With that reasoning, we predict that sequences like *me/te* should be ungrammatical. The PCC then arises due to a restriction of the tree logic system, namely the fact that no more than one unfixed node with the same underspecified node identification can be present in any partial tree under development.

To any PCC aficionados, it might seem that this account cannot be adequate, since, as noted by Adger and Harbour (2007), a natural counterexample to such an analysis occurs in Modern Greek where case syncretism is not exhibited, at least in singular clitics, but nonetheless the PCC is observed. The reasoning behind taking Greek to constitute such a counterexample goes as follows. Since Greek does not exhibit case syncretism, we would expect first/second person accusative clitics to behave on a par with third person accusative clitics, i.e. they should be treated as fixed rather than as unfixed. However, treating first/second accusative clitics as fixed will predict that the PCC should not be active in Modern Greek, contrary to fact. It turns out however that the case of Modern Greek is a nice illustration of what kind of possibilities one can find within such a system. The general tree-growth system, recall, defines as the base assumption, that case is defined as an output filter. Positing the concept of incremental update to a fixed structural relation was indeed merely a response to the constraint of tree growth itself. So, amongst the structures we expect individual clitics to display, is one in which the clitic encodes the actions associated with the output filter specification, distinguishing this from the constructive case scenario in which any such underspecified tree relation is immediately enriched. More specifically, we assume that, in Modern Greek just as in languages which exhibit syncretic morphology, both dative and first/second person accusative clitics project unfixed nodes. Then, the crucial difference between the two types of language is that in Greek but not in Spanish, for example, the lexical specification of the clitic includes an additional filter determining which structural relation must be matched in that final output. Hence, the only difference between the Spanish entries (39)-(41) and the Greek entries (43)-(45) is the existence of a case filter in the case of Greek, which encodes that the given clitic must be constructed as an indirect object and a direct object respectively when the node comes to be fixed:¹¹

¹¹Note that the following entries do not capture word order inside the cluster. A minimal modification in the triggering point of genitive and first person clitics will give us dative-accusative ordering in Greek. See Chatzikyriakidis (Forthcoming)

(43) Lexical entry for genitive clitics in Modern Greek

```

IF      ?Ty(t)
THEN IF  [↓1+?Ty(x)
        OR
        IF  Mood(Imp)
        THEN make(⟨↓1*⟩);go(⟨↓1*⟩);
              make(⟨↓0⟩);go(⟨↓0⟩)
              put(⟨↑0⟩⟨↑1*⟩?Ty(t));
              make(⟨↓0⟩);go(⟨↓0⟩)
              put(Ty(e),Fo(U),?∃x.Fo(x))
              put(?∃x.Tn(x),?⟨↑0⟩(Ty(e → (e → t))),gofirst(?Ty(t)))
ELSE    Abort

```

(44) Lexical entry for 1st/2nd person accusative clitics in Modern Greek

```

IF      ?Ty(t)
THEN IF  [↓1+?Ty(x)
        OR
        IF  Mood(Imp)
        THEN make(⟨↓1*⟩);go(⟨↓1*⟩);
              make(⟨↓0⟩);go(⟨↓0⟩)
              put(⟨↑0⟩⟨↑1*⟩?Ty(t));
              make(⟨↓0⟩);go(⟨↓0⟩)
              put(Ty(e),Fo(U),?∃x.Fo(x))
              put(?∃x.Tn(x),?⟨↑0⟩(Ty(e → t)),gofirst(?Ty(t)))
ELSE    Abort

```

(45) Lexical entry for third person accusative clitics in Modern Greek

```

IF      ?Ty(t)
THEN IF  [↓1+?Ty(x)
        OR
        IF  Mood(Imp)
        THEN make(⟨↓1*⟩);go(⟨↓1⟩);
              make(⟨↓0⟩);go(⟨↓0⟩)
              put(Ty(e),Fo(Ux),?∃x.Fo(x),gofirst(?Ty(t)))
ELSE    Abort

```

The crucial point in (43) and (44) is the case filters ‘ $\langle \uparrow_0 \rangle (Ty(e \rightarrow (e \rightarrow t)))$ ’ and ‘ $\langle \uparrow_0 \rangle (Ty(e \rightarrow t))$ ’, which basically say that a two place and an one place predicate respectively exist at their mother node. In other words the restrictions identify the node as having, in the output, to be the indirect object for genitive clitics and the direct object node for 1st/2nd person accusative clitics, but do not fix this treenode address rightaway. However such an analysis will make the wrong predictions for genitive clitics, since a genitive clitic in Modern Greek can also be constructed as the direct object in a number of constructions, which this account would disallow:¹²

- (46) a. Tu milo
 him.GEN talk
 ‘I talk to him.’
 b. Tu telefonisa
 him.GEN telephoned
 ‘I phoned him.’

This being so, it seems that there should be no case filter at all defined for genitive clitics in Modern Greek since more than one structural position is available for them. In effect, we return to an analysis of genitive clitics in Modern Greek identical to the one we have given for syncretized clitics in Spanish and Italian:

- (47) Updated lexical entry for genitive clitics in Modern Greek

```

IF      ?Ty(t)
THEN IF  [ $\downarrow_1^+$ ] ?Ty(x)
      OR
      IF  Mood(Imp)
      THEN make( $\langle \downarrow_1^* \rangle$ ); go( $\langle \downarrow_1^* \rangle$ );
           make( $\langle \downarrow_0 \rangle$ ); go( $\langle \downarrow_0 \rangle$ )
           put( $\langle \uparrow_0 \rangle \langle \uparrow_1^* \rangle ?Ty(t)$ );
           make( $\langle \downarrow_0 \rangle$ ); go( $\langle \downarrow_0 \rangle$ )
           put(Ty(e), Fo(U),  $\exists \mathbf{x}. Fo(\mathbf{x})$ )
           put( $\exists \mathbf{x}. Tn(\mathbf{x})$ ,  $\langle \uparrow_0 \rangle (Ty(e \rightarrow (e \rightarrow t)))$ , gofirst(?Ty(t)))
ELSE   Abort
    
```

¹²There are a number of double accusative verbs in Modern Greek. This fact would suggest that the case filter analysis for accusatives is also on the wrong track. However, the data are far from clear-cut in these constructions. For example it is impossible to substitute both accusative marked NPs with accusative clitics. In case of clitic substitution, one of the clitics must be genitive marked. What exactly is going on in these constructions is something that we cannot answer at the moment. For this paper we will assume that all accusative clitics are associated with the direct object node, leaving the double-accusative verb cases open for further enquiry

It might be argued that this analysis is overly weak as, though such output-filter case specifications indeed allow for underspecified tree-relations to be constructed, and supposedly to collapse and hence be debarred, it also fails to debar their successive enrichment by abduction (as in Latin), hence predicting wrongly that 1st/2nd person accusative clitics co-occur with genitives in Modern Greek, totally contrary to the facts.¹³ Countering this argument, notice that this problem does not arise if the output filter specifications are the necessary trigger for any such enrichment process.¹⁴ In the case of genitive clitics, according to the modified analysis, there is NO filter on output as to what the argument relation might be; there is simply the lack of any such information, hence no filter specification to trigger the abduction process. But, this being so, given the required genitive-accusative ordering of Modern Greek clitics, once the genitive is parsed, one locally unfixed node will remain at the time a 1st/2nd person accusative clitic comes to be parsed. Accordingly, the accusative will induce a locally unfixed node superimposed on the node initiated by the genitive. The pragmatically driven abduction step might then fix the node as the direct object, in the light of that output filter, but the parse will abort since this one fixed node will carry the presuppositions for two DISTINCT formula values, these being pronominals and debarring any local co-identification.¹⁵ We will thus basically end up with a fixed node, with conflicting metavariable presuppositions:

(48) After parsing *me* in *su-me*:

$$\begin{array}{c}
 Tn(a), \dots ?Ty(t), \diamond \\
 \mid \\
 \langle \uparrow_1^* \rangle Tn(a), ?Ty(x) \\
 \mid \\
 \langle \uparrow_0 \rangle \langle \uparrow_1^* \rangle Tn(a), \\
 Ty(e), Fo(\mathbf{U}_{Speaker'}), Fo(\mathbf{U}_{Hearer'}) \\
 ?\exists \mathbf{x}. Fo(\mathbf{x}), ?\exists \mathbf{x}. Tn(\mathbf{x}), \\
 ?\langle \uparrow_0 \rangle (Ty(e \rightarrow t)), \langle \uparrow_0 \rangle \langle \uparrow_1 \rangle ?Ty(t)
 \end{array}$$

¹³This problem was pointed out to us by Ronnie Cann.

¹⁴Enrichment processes, quite generally, require a license, such as metavariables with a formula requirement in the case of pronouns and ellipsis sites. Unrestricted license for content or structural enrichment would vastly over-generate, and is not available.

¹⁵The opposite order in a PCC construction given the case filter analysis for 1st/2nd person accusatives, namely accusative-genitive, will be captured by the same mechanisms that ban the accusative-genitive ordering in non PCC combinations. We have not given an account of ordering in this paper. However, assuming an account in line with [Chatzikyriakidis \(Forthcoming\)](#) where genitive clitics involve a restriction on their entry that aborts in case any fixed node exists will give us the desired results. 3rd person accusative clitics will project fixed structure, while, assuming treenode via pragmatic inference, the same will be true for 1st/2nd person accusative clitics given the analysis we proposed. Thus, a genitive clitic won't be able to get parsed after any accusative clitic has already done so.

3.4 The weak version of the PCC

Of course, the account so far can't be right for those languages in which first and second person clitics can co-occur; and these include some speakers of Spanish (Ormazabal and Romero, 2007), Italian (Cardinaletti and Shlonsky, 2004; Bianchi, 2006) and Catalan (Bonet, 2007). According to such speakers, co-occurrence of a first and second person clitic is allowed. What is still banned is a combination involving a third person dative clitic and a first/second person accusative. These cases seem to be an apparent counterexample to the analysis we propose, since, by assuming that *me/te* and *mi/ti* project unfixed nodes, we predicted wrongly that sentences like (12)-(15) should be ungrammatical contrary to fact. However there is evidence that the analysis we have posited is on the right track, and that the structural constraint assumed is just obscured by the existence of polysemy of the dative in some languages. It is a well-known fact that in all languages the dative is inherently underspecified, showing a flexibility in terms of construal between an argument and an adjunct form of construal. There are furthermore, at least in the languages we are examining, a form of adjunct dative construal, the so-called ethical datives, in which the expression that is dative marked is very weakly linked to the predicate. In most of the cases, these datives, associated with first or second pronouns, indicate that the utterance participants are affected in some way by the event denoted by the verb and its arguments (example (49) is from Jaeggli 1986):

- (49) Juan me le arruinó la vida a esta chica
 Juan me.DAT her.DAT ruined the life to that girl
 'To my disappointment, Juan ruined that girl's life.'

But why are ethical datives relevant to our discussion? The first thing one notices when dealing with ethical datives is that they seem to escape the PCC in many languages. In the literature on the PCC (refs), it is commonly assumed that in contrast to benefactive/malefactive and possessive datives, ethical datives are non-arguments, co-occurring with argumental datives, as in the scenario reported in Cuervo 2002, in which the scene-setting declaration of (50) might trigger the response (51):¹⁶

- (50) me le llevé auto (a Emilio)
 me.REFL him.DAT took the car Emilio.DAT
 'I took the car from him for myself' (I took Emilio's car).

- (51) En serio se te lo llevaste?
 really him.DAT you.REFL it.ACC took
 'Really, you took it from him for yourself?'

¹⁶These data presume on the realization of third person dative in modern Spanish in any clustering with the form of *se*, familiarly called 'spurious *se*' since Perlmutter 1971.

In a lexicalist framework, such an assumption would have to be realized by associating the two forms of construal with two distinct lexical specifications. A natural implementation of the ethical dative construal within the DS framework is, accordingly, to construct these datives as involving a LINK transition, which will build a type e node standing for the speaker or hearer of the discourse (see Cann et al 2005 for a characterization of hanging topic left dislocation in these terms). Unlike left dislocated topics though, no requirement for a shared term will be imposed on the tree which the LINK transition initiates. The fact that ethical datives induce a decoration on such s constructed LINKed structures (rather than decorating an unfixed node) provides us with a straightforward explanation of why the PCC does not arise in a PCC context where one of the clitics construed as dative is an ethical dative.¹⁷ Similarly, the entry for first and second person pronouns will have to have a disjunctive entry which will specify that, on one construal the clitic is specified as argumental but without further itemisation, on another construal that it can be used to induce a LINK transition. The lexical entry is shown below:

(52) Lexical entry for datives with a separate trigger for the ethical construal

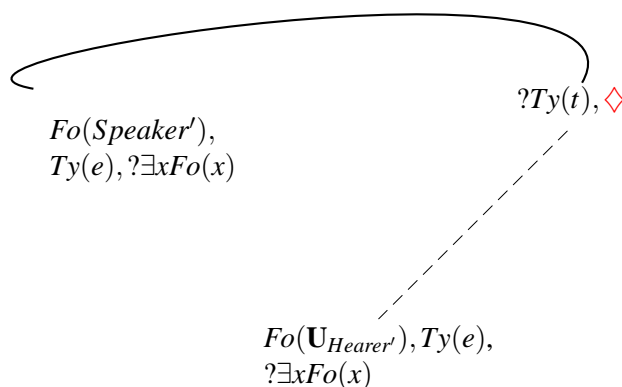
```

IF      ?Ty( $t$ )
THEN   IF      [ $\downarrow_1^+$ ]? $\exists x.Tn(x)$ 
        OR
        IF      Mood(Imp)
        THEN   make( $\langle \downarrow_1^* \rangle$ ); go( $\langle \downarrow_1^* \rangle$ );
                put( $\langle \uparrow_1^* \rangle ?Ty(t)$ );
                make( $\langle \downarrow_0 \rangle$ ); go( $\langle \downarrow_0 \rangle$ )
                put( $Ty(e), Fo(\mathbf{U}_{Speaker'/Hearer'})$ ), ? $\exists \mathbf{x}.Fo(\mathbf{x})$ 
                ? $\exists \mathbf{x}.Tn(\mathbf{x}), \langle \uparrow_0 \rangle \langle \uparrow_1^* \rangle ?Ty(t)$ ), go first(?Ty( $t$ )))
        ELSE   make( $\langle L \rangle$ ); go( $\langle L \rangle$ );
                put( $Ty(e), Fo(\mathbf{U}_{Speaker'/Hearer'})$ ), ? $\exists \mathbf{x}.Fo(\mathbf{x})$ ; go( $\langle L^{-1} \rangle$ )
ELSE    Abort

```

Assuming a cluster of a first person dative clitic along with a second person accusative clitic where the first person is interpreted as an ethical dative, the above entry predicts that such a structure should be grammatical since the structural restriction on unfixed nodes does not operate. The reason is that the ethical dative is construed as decorating a node LINKed to the top node of the primary tree:

¹⁷There is the exception of Greek, in which the PCC is active with ethical datives as well. Such a fact would propose that ethical datives in Greek have not developed polysemy and are in that respect captured by the underspecified modality posited for argumental dative clitics in Greek, in effect being parsed as optional arguments in the sense of Marten (2002). Furthermore, our analysis would predict that sequences of two genitive clitics in Greek should be ungrammatical. This is to a large extent true. However, there are a number of constructions involving a first - second person ethical dative plus a third person dative that although highly marginal, are acceptable by some speakers (Michelioudakis, 2007). The data are far from clear cut to provide an analysis for such a phenomenon. We leave this issue plus the details of the account of ethical datives in Greek open for future research.

(53) Parsing *me te*

This is presumably needed for languages escaping the PCC when one of the clitics is an ethical dative.

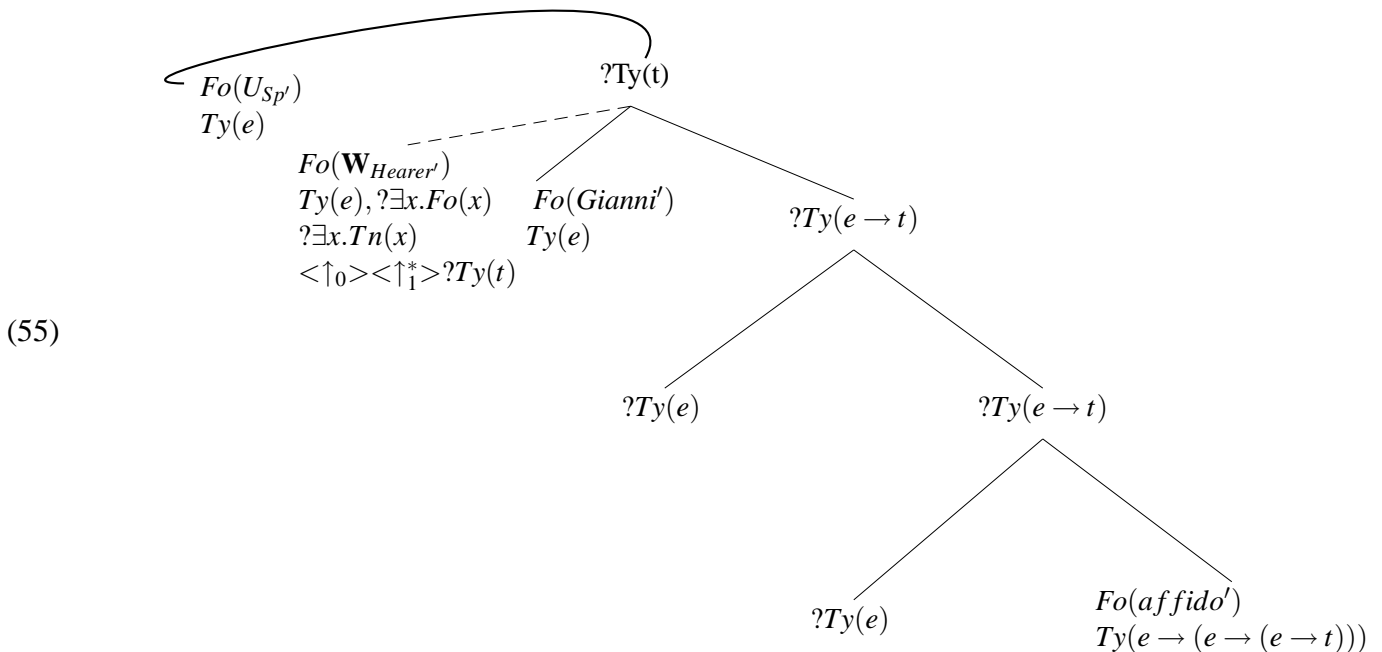
What is still left unaccounted for, however, is an explanation of the weak variant of the PCC, i.e. languages which permit first and second person clitic combinations that are both construed as arguments of the verb. The first thing we should note before giving such an account is that the weak variant of the PCC has limited generality for the languages that it is claimed to hold. This has been independently noted, as previously mentioned, for Spanish (Cuervo, 2002; Ormazabal and Romero, 2007), Italian (Cardinaletti and Shlonsky, 2004; Bianchi, 2006) and Catalan (Bonet, 2007). It seems that in general only a small number of people accept these combinations in the languages. However, none of the minimalist analyses captures this fact. For example, within Anagnostopoulou (2005) the weak PCC variant is the result of a multiple agree system where the functional head can check some of its features more than once. What is not captured however, is that these constructions are rather marginal and depend highly not only on the clitic combinations but also on the choice of the verb. But if indeed this is a phenomenon with limited generality, it is arguably too strong to posit the general accounts severally proposed by Anagnostopoulou (2005) for the weak PCC in general or Cardinaletti and Shlonsky (2004) for Italian, as such an account would predict that speakers accepting a number of first second person combinations, generally accept these combinations in all environments. However, as pointed out by Ormazabal and Romero (2007) for Spanish, the grammaticality judgments of such combinations do not only depend on the combinations themselves but to other factors such as the semantics of the verb. The same seems to be true of Italian, as judgements from native Italian speakers we have consulted have given us contradictory judgments with respect to a number of *mi/ti* clusters combined with a number of different verbs:¹⁸

¹⁸The native Italian speakers were asked to judge the grammaticality of a number of sentences within a scale from 0 to 6. The following average judgments show the different grammaticality judgments depending on the nature of the verb in each case

- (54) a. Lui mi ti presento (average acceptability judgement: 0)
 he me you presents
 'He presents me to you/ you to me.'
- b. Lui mi ti affido (average acceptability judgement: 0)
 he me you entrusts
 'He entrusts me to you/you to me.'
- c. Mi ti ha dato (average acceptability judgement: 3)
 me you has given
 'He/She has given me to you/you to me.'
- d. Mi ti presenteranno (average acceptability judgement: 4.5)
 me you will-present
 'They will present me to you/you to me.'

Notice in particular, the marked contrast of judgements of acceptability for *presentare* in the future as compared to the same verb in the past. If the above data are correct, then the constraint is far from clearcut and should not be attributed to a general feature of the grammar.

In DS, there is a way to cope with the described situation. Remember that we analyzed ethical datives escaping the PC as decorating a node of a LINKed structure, with the possibility of escaping the PCC in case an ethical dative occurs in the clitic cluster. Let us then assume that *me-te* combinations are licit just in case one of the two clitics makes use of this alternative. Assuming such an analysis, for a verb such as *affido* in (54-c), the parse after the processing of *affido* would yield the following:¹⁹



¹⁹In the following structure a value from context has been provided for the subject pronoun *lui*, namely 'Gianni'

At that point, the unfixed node can unify with one of the argument nodes. However, an open slot still remains in one of the argument nodes and the parse cannot continue. This might seem to leave the DS account in not much better a situation than its competitors. However, there is a simple and suitably lexical solution, which is that, for the speakers that accept such combinations, the verbs in question license their arguments as having a variant in which the arguments are assigned a context-licensing meta-variable (like the subject argument node which is invariably so decorated). This variant would allow the argument in question to be identified from context, hence from the term decorating the linked structure (indeed given the option taken to use the clitic itself as inducing and decorating a term in a paired linked structure, such an option would be essential to a wellformed outcome). There would thus be an essential pairing between availability of this LINK option for such speakers and appropriate polysemy of the associated verb. For those speakers that, to the contrary, do not accept any of the *mi-ti* clusters, no such variant is available. With this analysis, the variability of first/second person co-occurrence relative to a general preclusion of such pairs is correctly reduced to a lexical polysemy effect while retaining the tree-growth restrictions in their general form (such combinations were indeed possible in Latin, for some verbs).

3.5 The Romanian Case

Besides the weak-PCC displaying languages, there is the variant exhibited by Romanian (Savescu, 2007), which at first glance, seems to obscure the requisite generalizations about the PCC yet further. According to this version, more liberal than the generally recognized weak PCC languages, the constraint applies only to the first person pronouns, and not to the second. That is, a second person accusative clitic can co-occur with both a 3rd person and a first person dative clitic, but a first person accusative clitic cannot co-occur with either a second person or a third person dative clitic:

- (56)
- a. I te au recomandat ieri
him.DAT you.ACC have recommended yesterday
'They have recommended you to him.'
 - b. Mi te a prezentat Ion la petrecere
me.AT you.ACC has introduced John at party
'John has introduced you to me at the party.'
 - c. *I me au recomandat ieri
him.DAT me.ACC have recommended yesterday
'They have recommended me to him yesterday.'
 - d. *Ti m a prezentat Ion la petrecere
you.DAT me.ACC has introduced John at party
'John has introduced me to you at the party.'

Preliminary to giving an analysis, there is an essential property of these data in Romanian: the *me-te* combinations are strikingly different in status from the *me-te* combinations in the weak PCC languages. The data as illustrated by these Romanian sentences presented are uncontroversially acceptable in Romanian and with ALL verb-clitic combinations. This is wholly unlike the very partial regularities and

sporadic variation in judgements over *me-te* clusters in Italian, Spanish and Catalan. Thus, it seems that what we need is an account that is applicable in an entirely general way across these Romanian clitic sequences. As it turns out, on the DS account, these data can be seen to emerge from the DS form of analysis, with only minimal lexical modification of the account given for the Modern Greek PCC facts. In Modern Greek, we have suggested that with non-syncretic singular first and second person clitics, these nonetheless project only the relatively weak case specification of filter dictating the output structural configuration. First and second person clitics in Modern Greek, despite being non-syncretic, are parsed on an unfixed node. Romanian, like Modern Greek, has non-syncretic singular first and person clitics. Their non-syncretism, too, is encoded as a case filter on output, in effect a requirement that fixing of the unfixed node's site is restricted to a certain position. However, the similarity between first and second position clitics ends there. For, by assumption, we suggest, second person accusative clitics are UNlike first person accusative clitics in constructively inducing a fixed node in that position. In this respect, second person accusative clitics pattern, rather, with THIRD person accusative clitics. Such a mixed system, though not an immediate consequence of any tree-growth constraint is nonetheless expected to be one possible emergent system of clitics. The lexical entry for the second person singular accusative clitic in Romanian will have then the following :

(57) Lexical entry for the second person accusative clitic in Romanian

```

IF      ?Ty(t)
THEN   IF    [↓1+]?Ty(x)
        OR
        IF    Mood(Imp)
        THEN  make(⟨↓1⟩);go(⟨↓1⟩);
              make(⟨↓0⟩);go(⟨↓0⟩)
              put(Ty(e), Fo(UHearer), ?∃x.Fo(x);)
              gofirst(?Ty(t))
ELSE   Abort

```

Given the above lexical entry, all the above data are correctly captured. The structural constraint that no more than one unfixed node with the same underspecified address can be present is not applicable, since the second person accusative clitic will not decorate an unfixed node (exactly in the manner of the third person accusative clitic in both strong and weak PCC languages). On the other hand, the ungrammatical examples (56-c) and (56-d) are correctly predicted to be bad. This is because all dative clitics, as well as first person accusative clitics, are taken to decorate unfixed nodes. In that sense, and using the same reasoning we have used so far in explaining the PCC, these constructions are banned by the unfixed node restriction without modification.

4. Conclusions

In this analysis as sketched, individual clitics in individual languages reflect one (or more) types of strategy available for inducing tree growth for argument nodes within a local propositional domain. These range over building an unfixed node and fixing it; building an unfixed node and merely decorating it with an output filter; building a LINK transition onto a node to be decorated by a term; building a cluster of argument nodes. An unmissable property of this list is that the basis of explanation is ineliminably in terms of progressive tree growth reflecting on-line processing dynamics. While the details have to be specified item by item, with some, notably the dative, involving polysemy, the underlying generalization is not only in terms of incremental interpretation growth, but it is expressible only at the level of some total set of strategies for processing argument expressions with relatively free word order, as it is only at this level that the claimed correspondence between these effects and properties of clitics can be established. Furthermore, moving to such a level only makes sense if the explanation is made within a diachronic perspective, as it is only within a diachronic perspective that any explanation is available for why the range covered by mechanisms for construal of locally free argument-order in one language might correspond to the range of effects that a set of clitics can display in another, in particular the fact that such a range of actions should shift to becoming available only to a restricted set of forms severally distributed across that set. Hence, indeed, the shift from a very free set of choices available in an earlier language to a highly restricted lexical set in some later diachronically related language.

It might be argued that this style of explanation cannot in principle be a basis for a synchronic account of pronominal clitic distributions in a language, since no child acquiring that system has such a perspective. That this is so is of course true. Nonetheless, the PCC is a constraint on POSSIBLE clitic combinations; and, according to the analysis proposed, the constraint is a consequence of structural properties underpinning all tree growth, hence in any system, and this IS displayed in a system that each child acquires. Moreover, the existence of exceptions to such a constraint buttresses the explanation, despite the weakening of the account in terms of synchronic restrictiveness, precisely because these exceptions themselves are only explicable in a principled way at the same diachronic level.

What is striking about this level of explanation is its a priori nature: the dynamics of tree growth operating relative to cognitive constraints over a period of time leads us to EXPECT the types of effects that clitic systems display down to a remarkably fine level of detail. This is in marked contrast to the feature-based systems currently proposed, each being restricted by a methodology in which analyses may make reference (a) only to observed synchronic structures and (b) to structures which by definition are inhabited by strings as a whole, without any reference to how structures or interpretation might be incrementally developed.

It is this concept of tree growth reflecting the parsing process which has opened up such new possible avenues of explanation. With such explanations it turns out, we suggest, that there is no need to advocate an additional morphology component (or even sub-component) within which supposed clitic templates or feature-specific sub-vocabularies need to be postulated to express the requisite generalizations, in some sense independent of either phonology or semantic interfaces. Such types of explanation are replaced by an explanation solely in terms of growth of representations of content, a dynamics which is independently justified as the core concept of natural-language syntax. The over-arching system is thus

optimal in minimizing the number of discrete levels of representation or type of vocabulary that have to be independently defined in the grammar. The reduction is to two primary and wholly encapsulated vocabularies: the vocabulary for defining the nature of the input, phonology broadly construed, and the vocabulary for growth of representations of content, syntax broadly construed, the latter being defined in terms of properties of structure/interpretation interface and the process of incrementally establishing such structure. In some real sense, we suggest, the account proposed falls within the general minimalist methodology.

References

- Adger, D., Harbour, D., 2007. Syntax and Syncretisms of the Person Case Constraint. *Syntax* 10, 2-37.
- Anagnostopoulou, E., 1994. Clitic Dependencies in Greek. Doctoral dissertation, University of Salzburg.
- Anagnostopoulou, E., 1997. Clitic Left Dislocation and Contrastive Left Dislocation. In: Anagnostopoulou, E., Van Riemsdijk, H., and Zwarts, F. (eds), *Materials on Left Dislocation (Linguistik Aktuell 14)*. Amsterdam:Benjamins, 151-192.
- Anagnostopoulou, E., 2001. Two Classes of Double Object Verbs: The Role of Zero Morphology. In: van Oostendorp, M., Anagnostopoulou, E. (eds.), *Progress in Grammar: 20 Years of Grammaticamodellen* Meertens Institute, electronic book.
- Anagnostopoulou, E., 2003. *The Syntax of Ditransitives: Evidence from Clitics*. Mouton de Gruyter.
- Anagnostopoulou, E., 2005. Strong and Weak Person Restrictions: A Feature Checking Analysis. In: L., Heggie and F., Ordonez (eds), *Clitics and Affixation*. Amsterdam : Benjamins, 199 - 235.
- Blackburn, P., Meyer - Viol, W., 1994. *Linguistics, Logic and Finite Trees*. Bulletin of Interest Group of Pure and Applied Logics 2, 2-39.
- Bianchi, V., 2006. On the Syntax of Personal Arguments. *Lingua* 116.
- Bonet, E., 1991. *Morphology after Syntax: Pronominal Clitics in Romance*. Doctoral dissertation, MIT.
- Bonet, E., 1994. The Person Case Constraint: A Morphological Approach. In: H., Harley and C., Philips (eds), *The morpho-logy Syntax Connection*. MIT, Cambridge, MA, 33-52.
- Bonet, E., 2007. The Person Case Constraint and Repair Strategies. To appear in: Alessasndro, R., Fischer, S., Hrafnbjanson, G. H. (eds), *Person Restrictions*. Mouton de Gruyter.
- Bouzouita, M., 2008a. At the Syntax-Pragmatics Interface: Clitics in the History of Spanish. In: Cooper, R., Kempson, R. (eds), *Language Evolution and Change*. Cambridge: Cambridge University Press.
- Bouzouita, M., 2008b. *The Diachronic Development of Spanish Clitic Placement*, Phd Thesis, King's College, London.
- Cann, R., Kempson, R., Marten, L., 2005. *The Dynamics of Language*. Oxford: Elsevier.

- Cann, R., Kempson, R. and Purver, M. 2007. Context and Wellformedness: the Dynamics of Ellipsis. *Research on Language and Computation* 5, 333-358.
- Cann, R., Wu, Y., 2007. The Dynamic syntax of Chinese Passive constructions, Unpublished paper.
- Cardinaletti, A., Shlonsky, U., 2004. Clitic Positions and Restructuring in Italian. *Linguistic Inquiry* 35, pp. 519-557.
- Chatzikyriakidis, S., 2009. Clitics in Grecia Salentina Greek: A Dynamic Account. To be published in *Lingua*.
- Cuervo, M., C., 2002. Spanish Clitics: Three of a Perfect Pair. Generals paper, MIT, 2002.
- Given-new ordering effects on the production of scrambled sentences in Japanese. *Journal of Psycholinguistic Research* 32, 573-96.
- Johnson, D., Lappin, S., 1999. Local Constraints vs Economy. Stanford, CA:CLSI.
- Haspelmath, M., 2004. Explaining the Ditransitive Person - Role Constraint. Electronic form article. Available at: <http://email.eva.mpg.de/haspelmt/2004dpr.pdf>.
- Heap, D. 2005. Constraining optimality: Clitic sequences and feature geometry. In L.Heggie and F.Ordóñez, editors, *Clitic and Affix Combinations*. John Benjamins.
- Iatridou, S., 1995. Clitics and Island Effects. In: Bhatt, R., Garrett, S., Han, C. - H., Izvorsky, R. (eds), *Penn working papers in Linguistics* 2, 11-31.
- Kallulli, D., 2000. In Beukema, F., Den Dikken, M., (eds.) *Clitic Phenomena in European Languages*, 209-248. Amsterdam: John Benjamins.
- Kempson, R., Meyer-viol, W., Gabbay, D., 2001. *Dynamic Syntax: The Flow of Language Understanding*. Blackwell Publishing.
- Kempson, R., Cann, R., 2007. Production Pressures, Syntactic Change and the Emergence of Clitic Pronouns. Ms., King's college London.
- Kempson, R., Cann, R., Purver, N., 2006. Grammars as Parsers: Meeting the Dialogue Challenge. *Research on Language and Computation* 4(2-3), 289-326.
- Marcus, M. 1980. *A Theory of Syntactic Recognition for Natural Language*. MIT Press.
- Marten, L., 2002. At the Syntax-Pragmatics Interface: Verbal underspecification and concept formation in Dynamic Syntax. *Oxford Studies in Theoretical Linguistics* 4. Oxford: Oxford University Press.
- Martins, A-M, 2002. The loss of ip-scrambling in portuguese: Clause structure, word order variation and change. In D. Lightfoot, editor, *Syntactic Effects of Morphological Change*. Oxford University Press, Oxford, 2002.

- Michelioudakis, D., 2007. Ethical Datives and Argument Structure in Modern Greek. Unpublished Mphil dissertation, University of Cambridge.
- Monachesi, P. (2005) *The verbal complex in Romance: a case study in grammatical interfaces*. Oxford University Press.
- Nevins, A., 2007. The Representation of Third Person and its Consequences for Person-Case Effects. *Natural Language and Linguistic Theory* 25.2: 273-313.
- Ormazabal, J., Romero, R., 2007. The Object Agreement Constraint. *Natural Language and Linguistic Theory*, 2007, 25. Springer, 315-347.
- Rezac, M., Bejar, S., 2003. Person Licensing and the Derivation of PCC Effects. In: Prez-Leroux A., Roberge, Y., (eds.), *Romance Linguistics: Theory and Acquisition*, John Benjamins, 49-62.
- Rezac, M., 2008. Phi across Modules. Ms.
- Rezac, M., 2007. The Syntax of Eccentric Agreement: The Person Case Constraint and Absolute Displacement in Basque. *Natural Language and Linguistic Theory*.
- Săvescu, O., 2007. Challenging the Person Case Constraint: Evidence from Romanian. In: Camacho, J., Flores-Ferran, N., Sanchez, L., Deprez, V., Jose Cabrera, M. (eds), *Romance Linguistics 2006. Selected Papers from the 36th Linguistic Symposium on Romance Languages (LSRL)*, New Brunswick, March-April 2006. John Benjamins.
- Sperber, D., Wilson, D., 1986. *Relevance: Communication and Cognition*. Blackwell publishing.
- Wu, Yicheng. 2005. *The Dynamic Syntax of Left and Right Dislocation in Chinese*. PhD Thesis, University of Edinburgh.