

On subject reference and the cartography of clause types

A commentary on the paper by Biswas

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Abstract In this commentary, I will critically discuss Priyanka Biswas' contribution to this volume (2013), in which she examines the properties of five types of clauses headed by participial verb forms in Bangla and proposes an account of their sometimes novel properties in terms of Landau (2004)'s theory of control. I will take Biswas' empirical analysis as a starting point for a broader discussion of finiteness and the relationship between different types of embedded clauses and the kinds of subjects they allow. I will argue that the theoretical treatment Biswas herself adopts does not allow a proper explanation of the connection, and will propose a distinct approach in terms of differential clause sizes. While this approach will remain highly speculative, I will argue that it at least allows us to formulate falsifiable hypotheses with testable predictions, and thus could serve as the foundation for a truly insightful theory of the distribution of subject types.

Keywords Finiteness · Cartography · Subjects · Case · Control · Embedding · Clause-size · Bangla

1 Introduction

In her contribution to this special issue, Priyanka Biswas examines the properties of five types of clauses headed by participial verb forms in Bangla. While the initial identification of the five types is made on the basis of the particular participial form used and the way in which the embedded clause relates to the matrix clause, Biswas shows that these clause types also differ from each other systematically in terms of the nature of the subjects they allow and in the restrictions on their temporal interpretation. Biswas compares her findings for Bangla with both the well-known

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patterns in English and the more novel patterns in Tamil and other languages reported by Sundaresan and McFadden (2009) (henceforth SM09), and shows that there are crucial differences which will require a distinct account. She then proposes an analysis, couched in terms of Landau (2004)'s (henceforth L04) calculus of control, which covers the attested variation and the observed correlations between temporal interpretation and subject types. Perhaps the most interesting claim that Biswas makes is that, in two of the participial clause types, the observed null subjects are not obligatorily controlled (OC) PRO—as might have been expected from the fact that these are non-finite clauses—but in fact (little) *pro*. Making this assumption allows her to account for interpretive properties of these subjects along the *de selde re* dimension and under ellipsis.

In this commentary, I will consider the Bangla patterns that Biswas has identified and explore what they tell us about finiteness, the distribution of subject types and the connection with tense and clausal dependency. While I find her specific analysis of the Bangla patterns convincing, I will argue that it leaves much to be desired in the broader theoretical context. Taking the version of Landau's theory that Biswas develops as a starting point, I will argue that we are still falling short of a real explanation of the cross-linguistic patterns that we find, and of an understanding of how clausal embedding works and why certain types of clauses only allow certain types of subjects. I will then discuss, in an admittedly programmatic manner for the time being, how we might proceed to develop a more satisfactory theory which can derive the connections we observe rather than stipulating them, and which makes falsifiable predictions about the range of clause types that should be found in the world's languages.

In Sect. 2, I will briefly summarize Biswas' paper, introducing the relevant Bangla clause types and the basics of her analysis of their behavior. In Sect. 3, I will examine in greater detail Biswas' claims about the properties of Bangla, discussing her important insights and critically examining the import of the Bangla facts for the comparative syntax of embedded subject positions. Then in Sect. 4, I will consider her theoretical treatment of the Bangla participial clauses and argue that, while it can account for the observed facts and fit them within the comparative system devised by L04, crucial aspects of the theory are lacking in explanatory power and leave us with more questions than answers when it comes to the relationship between (non-)anaphoric subjects, tense and clause type. As such, in Sect. 5, I will outline the skeleton of a theory based on the idea that clause types displaying different degrees of finiteness represent distinct amounts of structure in the left periphery, with relationships between temporal and nominal referential properties falling out of their presence at similar heights in the clausal cartography. Finally, in Sect. 6, I will discuss how this basic theory relates to Biswas' own proposals, noting how her careful empirical work allows us to test out the theory by applying it to the Bangla facts.

2 An overview of Biswas' paper

Biswas discusses three participial forms which appear in five different clause types. I summarize their defining properties in Table 1.

Table 1 Bangla participial clause types

Ptc. Form	Function of clause	Subject
Perfective	Conjunctive adjunct	Null
Conditional	Conditional adjunct	Null/overt
Imperfective	(Irrealis) complement	Null
	Temporal adjunct	Null/overt
	Purpose adjunct	Null

As the table makes clear, the perfective and conditional participles each form a single kind of adjunct clause, whereas the imperfective participle forms complement clauses as well two distinct types of adjuncts. I will henceforth refer to the five clause types (in the order in which they appear in the table) as **perfective**, **conditional**, **complement**, **temporal** and **purpose**. Biswas provides two arguments for her claim that all five of these clause types should be considered non-finite. First, none of the relevant verb forms display overt agreement morphology. Second, in all of these clause-types, negation is required to be pre-verbal whereas, in finite clauses, negation is post-verbal in Bangla (see also Simpson and Syed 2013; Ramchand 2013).

What is of particular interest is the distribution of subject types in the five classes of participial clause. As Table 1 indicates, all five allow null subjects, but only two allow overt ones. Crucially, the null subjects that appear in these clauses are not all equal. For one thing, those found in the perfective, complement and purpose clauses are obligatorily coreferent with a matrix argument, while those in the temporal and conditional clauses can be disjoint under certain circumstances. This initial interpretive difference, along with the difference in the availability of overt subjects, suggests that we might be dealing with two distinct types of empty category. Since Bangla is a *pro*-drop language (i.e. it allows null subjects with typical pronominal behavior in prototypical finite clauses), we have to consider the possibility that what we are seeing here is an alternation between OC PRO and *pro* in the different participial clause types.

Biswas goes on to examine the properties of these null subjects in more detail in order to determine, for each clause type, whether PRO or *pro* is indicated. She considers the availability of strict and sloppy readings for the empty subject positions under ellipsis, as well as whether coreferent empty subjects are interpreted *de se* or *de re* relative to their antecedents. Her ultimate conclusion is that the perfective, complement and purpose clauses have OC PRO, since the embedded subject is obligatorily coreferent, receives a sloppy interpretation under ellipsis, and is interpreted obligatorily *de se*. In the conditional and temporal clauses, however, the subject can not only be disjoint and overt but can, under coreference, receive a strict reading under ellipsis and a *de re* interpretation. Hence, Biswas argues that, in these clause types, we actually find *pro* rather than PRO, despite the fact that the clauses look non-finite and lack overt agreement.

An interesting difference that Biswas points out between Bangla, on the one hand, and both English and Tamil, on the other, is that all non-finite complement clauses in Bangla require a null subject—i.e. not just complements of verbs with meanings

Table 2 Bangla participial clause types

Function of clause	Subject	Features
Perfective adjunct	PRO	[+T, -Agr]
Conditional adjunct	pro/overt	[+T, +Agr]
'try' complement	PRO	[-T, -Agr]
'want' complement	PRO	[+T, -Agr]
Temporal adjunct	pro/overt	[+T, +Agr]
Purpose adjunct	PRO	[+T, -Agr]

like 'try', but also of verbs with meanings like 'want'. Nonetheless, there are points on which these two classes of complements in Bangla diverge in their behavior, and in this they parallel their English and Tamil counterparts. The 'want'-class complements, but not the 'try'-class ones, allow partial control and temporal modification that indicates a time distinct from that of the matrix clause. On this latter point, all of the adjunct clause types pattern with the 'want'-class complements. This leads Biswas to conclude that participial complements of 'try'-class verbs have a [-T] specification, while all other participial clause types are [+T].

This state of affairs paves the way for Biswas' theoretical account of the distribution of subject types in Bangla non-finite clauses. She couches her analysis in terms of L04's calculus of control, according to which the licensing of different subject types is determined by the interactions of the T and Agr specifications of the clause. DPs are partitioned into [+R] and [-R] (building on the referential classification of DPs proposed in Reinhart and Reuland 1993), the former including *pro*, pronouns, and R-expressions, and the latter, OC PRO and anaphors. Abstracting away from certain special cases, [+R] subjects are allowed only in clauses which are [+T, +Agr], while a [-R] subject—i.e. PRO—is required everywhere else. Against this background, Biswas proposes, for the various participial clause types of Bangla, the feature specifications given in Table 2. Observe that, given the distinction between 'try'-class and 'want'-class complements, we now have six distinct types of participial clause.

Consider how this distribution of features accounts for the observed facts of Bangla. First, the conditional and temporal clauses, being [+T, +Agr], are expected to have [+R] subjects, and indeed they do allow overt subjects, disjoint from matrix arguments. In the cases where they appear with a null subject, Biswas has argued that this is in fact *pro* and not PRO, hence also [+R] and in line with expectations. The 'try'-class complements are specified [-T, -Agr], which correctly predicts that their subjects should be the [-R] controlled PRO, and that they should allow no mismatched temporal modification. The remaining clause types are expected to allow only [-R] PRO as their subject, owing to their [-Agr] specification, but will allow distinct temporal modification on account of their [+T] specification.

This analysis leaves one somewhat surprising constellation—'want'-class complements and purpose adjuncts are both specified [+T, -Agr]. Recall that both involve a so-called imperfect participle. This leads to the question of why they should seem to be identical in their internal properties in spite of appearing in rather different external contexts. Biswas proposes a rather clever way to account for this, by analyzing the purpose adjuncts such that they include a silent modal with the properties of a

‘want’-class verb. The projection of this silent verb is what is adjoined to the matrix clause, while the participial clause that we actually see is a complement to the silent verb. That is, purpose adjuncts are complements of hidden ‘want’-class verbs, hence their clause-internal behavior is just like that of the complements of overt ‘want’.

Biswas then notes an interesting restriction on the tenses that can be used with participial clauses—not within the clauses themselves, but in the matrix clauses in which they are embedded. Temporal adjunct clauses are only allowed under episodic matrix tenses, while conditional adjuncts are only possible under non-episodic matrix tenses. The remaining clause types are free of restrictions of this kind. In other words, clauses which obligatorily contain OC PRO subjects are allowed under any kind of matrix tense, while those clause types that allow [+R] subjects are temporally restricted. Biswas proposes to account for this by reinterpreting the [+Agr] feature that she posits in these clauses. Rather than being manifested in overt agreement (which, again, is lacking in all of these clauses), it comes out in this temporal restriction. Specifically, [+Agr] bears a value **realis** in the temporal and conditional clauses, with the requirements for episodic vs. non-episodic matrix tense in the two clause types coming out of whether the [+Agr: *realis*] feature is bound or obviated.

To sum up, Biswas’ contribution to this issue presents a thorough and well-argued account of the types of subjects licensed in a range of non-finite clause types in Bangla. I see the central contributions of this work—in addition to a careful description of an interesting set of data—as the following. First, she gives a clear demonstration that the non-finite clauses in Bangla realize a number of distinct structures, including four distinct structures built around one identical surface form in the imperfective participle. Second, she makes a strong argument that the empty category in certain non-finite clause types is in fact *pro* rather than OC PRO. Third, she provides an exposition of how these differences in the various clause types are paralleled by differences in their temporal interpretation and restrictions. Fourth, she adduces evidence that some of the initially apparent similarities between non-finite clause-types in Bangla and languages like English and Tamil turn out to conceal surprising differences in matters of detail. Finally, she proposes a rather insightful analysis of a puzzling set of similarities between two of the Bangla clause types—the complements of ‘want’-class verbs and purpose adjuncts. Where Biswas’ contribution remains incomplete and leaves room for development is in aspects of the broader cross-linguistic comparison and especially in the pursuit of an explanatory framework for the properties of embedded (non-finite) clauses. Still, the empirical and analytical contributions of the paper serve well as a background for discussion of how to move closer towards such a framework.

In the following section, I will consider in somewhat greater detail the significance of the Bangla patterns identified by Biswas for the comparative study of non-finite clausal embedding. In the remainder of the paper, I will move on to more critical discussion of the broader theoretical issues.

3 Bangla and the comparative grammar of embedded subjects

Here, I will consider in some detail the novel patterns in the distribution of subject types that Biswas describes for Bangla participial clauses, patterns which she argues

are crucially distinct from what is described for other languages by L04 and SM09. The differences she reports are indeed real, but the important question is whether existing theories can already accommodate them (potentially with minor adjustments). I will argue here that Biswas' data are not of the sort that would lead us to reject or seriously rework the approaches in L04 and SM09, but that they do yield important insights into how we should further develop those theories. The main distinctive facts of Bangla that I will discuss are the impossibility of overt subjects in purpose adjuncts, the impossibility of overt subjects in the complements of 'want'-class verbs, the evidence that the null subject in temporal and conditional adjuncts is *pro* rather than OC PRO, and the restrictions on the tense of the matrix predicate when there is an embedded temporal or conditional adjunct.

Let us begin with the clause types which allow an overt subject in Tamil (and English), but not in Bangla. First, the non-finite complement of what are commonly referred to as 'want'-class verbs allows an alternation between a null coreferent subject (1a) and an overt disjoint subject (1b) in Tamil (SM09) (formatting mine):

- (1) a. Champa-vũkkũ_i [PRO_i orũ samosa-væ saappiɖ-æ] veŋɖ-um.
Champa-DAT PRO a samosa-ACC eat-INF want-N.3SG
'Champa wants to eat a samosa.'
- b. Champa-vũkkũ [Sudha orũ samosa-væ saappiɖ-æ] veŋɖ-um.
Champa-DAT Sudha.NOM a samosa-ACC eat-INF want-N.3SG
'Champa wants Sudha to eat a samosa.'

Adjunct infinitival clauses with a purpose interpretation show the same alternation:

- (2) a. [PRO_{i,*j} saadatt-æ saappiɖ-æ], naan_i ve|jjæ poo-n-een.
PRO rice-ACC eat-INF, I.NOM outside go-PST-1SG
'I went out (in order) to eat rice.'
- b. [Avan saadatt-æ saappiɖ-æ], naan ve|jjæ poo-n-een.
he.NOM rice-ACC eat-INF, I.NOM outside go-PST-1SG
'I went out (in order) for him to eat rice.'

Biswas shows that, in Bangla on the other hand only a null coreferent subject is allowed in both 'want'-class complement and purpose adjunct infinitivals, discussing structures like the following (formatting mine):

- (3) Rik_i [*Meri/PRO_{i,*j} jitte] cay.
Rick Mary win-IPL want-PRS-3
'Rick wants (*for Mary) to win.'
- (4) Rik_i [ec_{i,*j}/*Sudha promoSO_n pete] porikkha dilo.
rik Sudha promotion get-IPL exam give-PST-3
'Rick took an exam in order (*for Sudha) to get a promotion.'

The question we must ask now is how surprising it is that these clause types do not allow an overt subject in Bangla. I suggest that the answer is: not very. For one thing, both L04 and SM09 develop accounts that are well equipped to deal with clause types that do not allow overt subjects. The only moderately surprising fact is that we get

this type of clause in Bangla in contexts where Tamil and English apparently evidence a different clausal type, namely one which allows the alternation. It is, of course, a general hope that we would be able to predict the nature of an embedded clause from that of its environment—e.g. from the properties of the selecting predicate; and the works being discussed here explicitly attempt to move the theory in this direction. Still, we do not expect a direct mapping from environments to embedded clause types, certainly not at our current level of understanding and ability to define distinct environments. Even if we find that the complements of certain verbs including English *want* and Tamil *venq* will typically, or even universally, allow overt subjects, we may still find that the Bangla verb *cay* has other properties that motivate placing it in a different class.

What is potentially of more interest here is the fact that it is not just *cay* that does not allow overt subjects in its non-finite complement; apparently there are no non-finite complement clauses in Bangla that do so at all. For SM09's theory, this is somewhat surprising at first glance. If the type of complement clause is determined essentially by selection, as they claim, and if Bangla has complement clauses that require an OC PRO subject and, furthermore, has available embedded clause structures that allow overt subjects, we might expect at least one verb in the language to select for that clause type. I suggest, however, that what we are seeing here is analogous to the situation in a language like German. German has no clause types built around the infinitival form where the verb is preceded by the particle *zu* (roughly the equivalent of English *to*) which allow an overt subject. Regardless of the context in which clauses of this type show up, they always have OC PRO (or, in raising complements, unpronounced copy) subjects. We are left to wonder why it is that languages like English and Tamil allow so much flexibility, while German does not.

The answer that I propose, which is in the spirit of SM09, is that what is realized morphologically as the German *zu* infinitive does not involve precisely the same structure as what is realized as the English *to* infinitive. Indeed, there is clear evidence that the English *to* infinitive corresponds to at least two distinct structures—what's usually analyzed as a CP in control infinitives and what's usually analyzed as a TP in ECM and raising infinitives (see Sect. 5 for more discussion). In German, then, the *zu* infinitive only realizes a structure (or set of structures) that corresponds more closely to the kind of infinitive found in English in the complement of verbs like *try*. To the extent that the language makes use of structures more analogous to the English 'want'-class complements, these must be realized morphologically in some distinct manner. In any case, one saving grace is that the relevant clauses we are concerned with here in Bangla are a species of complement. However exactly we analyze their behavior, we have the ability to say that restrictions will be placed on them by their selecting predicates. Though it may be disappointing to have to say that all verbs which select for non-finite complements in this particular language happen to select for a type that allows no overt subject, this is at least a coherent theoretical statement. If we were dealing here with a kind of adjunct clause, we would be at more of a loss. Adjuncts are, by definition, unselected, so we cannot attribute restrictions on their properties to requirements coming from the outside.

But of course, there is also an adjunct clause type, namely the purpose adjunct infinitive, which does not allow overt subjects in Bangla, again in spite of the fact

that the parallel Tamil clauses do allow the alternation between PRO and overt subject. How are we to accommodate this? If the properties of embedded clauses are determined by the context in which they are embedded, we will have a difficult time preventing a distinct clause type from appearing in the relevant appropriate environments since, as adjuncts, nothing from the outside will be able to constrain these clauses. Fortunately, this issue need not concern us further if we adopt Biswas' own analysis, according to which purpose adjuncts actually contain a silent 'want'-class verb which takes the clause we see on the surface as its complement. The abstract clausal structure built around this silent verb is what is adjoined to the main clause. Now, whatever we say for the behavior of *cay* and its complement clauses will apply to the purpose infinitives as well. Note how the logic works here—the matrix environment is not allowed to impose restrictions from the outside on the properties of an adjunct clause, precisely because that clause is an adjunct. However, the embedded clause itself, by its own nature, can impose restrictions on its own internal properties. In other words, while particular matrix verbs can't impose requirements on the nature (anaphoric vs. independent, for example) of the clausal adjunct, purpose adjuncts can nevertheless still have a specific constellation of properties, including the impossibility of a [+R] subject, due to requirements imposed within the adjunct itself.

Let us then turn to the data Biswas presents, which point to a far more significant difference between Bangla and Tamil: the evidence that, in those non-finite clause types where an overt subject is allowed, the alternative null subjects are in fact *pro* and not OC PRO. Consider first a bit of the background. The traditional assumption was that finite clauses allow overt subjects, while non-finite clauses in general do not, having only PRO. Many languages also have unpronounced subjects in some kinds of finite clauses, but the interpretive and other properties of these unpronounced subjects are distinct from those found in prototypical infinitives, thus it is assumed that they represent a distinct silent pronominal element that we call *pro*. In the simplest case, there would be two broad types of clause—those which allow overt and *pro* subjects but not PRO, and those which allow PRO but not overt or *pro* subjects. However, one of the main empirical contentions of SM09 is that there is (at least) a third clause type defined in terms of this typology—one where overt subjects alternate with PRO. The argument is relatively straightforward for English and similar languages which are typically thought to lack *pro*: if a clause type allows both overt and covert subjects, the covert subject can really only be PRO (assuming that we don't have a case of raising). For Tamil, which is normally thought to have *pro*, the situation is more complicated, since we need evidence to decide which category specific null subjects belong to. SM09 consider the question in some detail, and argue that the null subjects are indeed PRO. Note that this conclusion is surprising in at least two ways. First, it violates the assumption of traditional theories that PRO is in essentially complementary distribution with overt subjects. Second, what emerges is not just the possibility of PRO, but the apparent impossibility of *pro*. Again, cross-linguistically *pro* is typically found in alternation with overt subjects; thus, in most clause types where an overt subject is possible, so is *pro*. Indeed, the theoretical account that SM09 develop is designed to accommodate clause types with a PRO/overt subject alternation, but it is not designed to specifically rule out *pro* in those clauses. Dealing with this issue

essentially remains an open question in their account (see their Sect. 3.5.2 for some speculation). Nonetheless, the empirical arguments for the existence of PRO/overt subject alternations in *pro*-drop languages remain, both for Tamil and now also for a number of other languages (see also Sundaesan 2013 for detailed discussion of this point).

From this perspective, what Biswas is arguing for in Bangla is a return to a more conservative position. The null subject alternating with overt subjects is *pro*, while PRO is what we get in contexts where overt subjects are not licensed. On the other hand, there is still a non-traditional aspect of Biswas' analysis—*pro* is not normally assumed to be available in non-finite clauses. Standard analyses of well-known *pro*-drop languages, like Spanish, posit *pro* as the null subject in finite clauses, but PRO as the null subject in infinitives (Sundaesan 2013). Biswas' proposal thus represents something novel in this respect, and its conclusions for Bangla are, in any case, clearly in contrast to SM09's conclusions for parallel sentences in Tamil. It is, of course, possible that one of these papers is mistaken in its conclusion, but the authors are all quite careful in their evaluation of the evidence. On balance, we are thus led to conclude that Bangla really does have *pro* subjects in (certain classes of) non-finite clauses while Tamil has OC PRO in similar environments.

Granting this result, the import of Biswas' paper on this point is essentially that languages can differ in the kind of empty subject that alternates with overt subjects in non-finite clauses. We must then ask again what consequences this has for our general theory of the distribution of subject types. In one sense, they are arguably quite minor. We do not have to expand the inventory of clause types defined in terms of allowable subject classes that is already assumed by SM09, because Biswas' participial clauses show an alternation between overt subjects and *pro* which is already familiar from the prototypical finite clauses of *pro*-drop languages. In another sense, however, the consequences are more significant. Our theory of subject distribution has to ultimately do two things. On the one hand, it has to be able to accommodate all of the clause types that are attested in the languages of the world. This is the part where the situation isn't really changed by the patterns observed by Biswas. On the other hand, our theory should provide a framework for understanding the distribution of these clause types across syntactic contexts, and across languages. Here Biswas' contribution sheds new light on the combination of patterns that might be found in a given language, and of how two languages—like Bangla and Tamil—can differ.

On the question of how different clause types are distributed across syntactic contexts, it has long been known that there is an important relationship between the temporal interpretation of a clause and the properties of its subject. The last result of Biswas' paper that I wish to discuss here offers some new data on just this point. The kind of connection that is most familiar has to do with restrictions on the embedded clause, in terms of its own temporal interpretation or ability to host aspectual information. As noted above, Biswas reports a pattern in Bangla that is quite different. Certain embedded clause types are restricted, not in terms of their own tense/aspect, but in terms of the tense/aspect of the matrix clause under which they can be embedded. Specifically, the temporal adjuncts can only be embedded under main clauses with an episodic tense form, while the conditional adjuncts are restricted to non-episodic main clauses. This suggests that the way these clause types are embedded involves

an aspectual-semantic relationship with the matrix clause. Something semantic is in any case indicated by the fact that these non-finite clause types are both adjuncts, so it would be difficult to impose the restrictions here syntactically.

Nonetheless, this does not mean that nothing syntactic is at stake here and that we can leave everything to the semantics. The really interesting point is that the two clause types that show restrictions of this kind are precisely those two non-finite clause types that allow overt subjects in Bangla. I will not attempt an analysis of what is going on here, but I would like to suggest that it fits in with a broader pattern: roughly, the more temporal specification a clause has, the more it tends to allow or even require a [+R] subject. As discussed by SM09, the complements of 'try'-class infinitives in languages like English and Tamil have completely anaphoric tense and also most strongly require an OC PRO subject, while prototypical finite clauses have independent temporal specifications and require a [+R] subject. A number of other clause types take up an intermediate position on both scales, like the complements of 'want'-class verbs. Now, in the case at hand it seems reasonable to think that the relevant embedded clauses have some specification of their temporal interpretation, which is specified to be **dependent** on that of the matrix clause—i.e. interpreted relative to the temporal parameters of the matrix. This temporal interpretation will not, however, be **anaphoric**, in the sense of being obligatorily identical to or subsumed within the temporal parameters of the matrix. The specifications of that relationship are precise to the extent that they refer to elements of the aspectual structure of the matrix event, thereby ensuring that only certain aspectual combinations will lead to a felicitous interpretation. This temporal specification is then sufficient to fall into the region of the continuum that correlates with the possibility of an overt subject.

4 Landau's calculus and the quest for an explanation

Biswas' paper thus offers solid descriptive analysis and insight into intriguing empirical patterns in Bangla which must inform our theory of subject distribution. It is when we arrive at the formal details of the analysis she proposes that we must be most critical of her contribution and, I will argue, move to a different kind of solution. In particular, her adoption of L04's Calculus of Control, based on T and Agr features, leads to a stipulative account which fails to actually explain the patterns she identifies for Bangla and how they relate to the variation attested in other languages.

The crucial part of L04's theory for current purposes is his *R-assignment Rule*, reproduced in (5) (his (39)):

- (5) *R-assignment Rule*
 For $X_{[\alpha T, \beta Agr]}^0 \in \{I^0, C^0 \dots\}$:
 $\emptyset \rightarrow [+R]/X_{[\square]}^0$, if $\alpha = \beta = '+'$
 $\emptyset \rightarrow [-R]/\text{elsewhere}$

The $[\pm R]$ specification on I^0 is what determines whether a [+R] DP or a [-R] DP will be licensed as the subject. The rule has the result that [+R] subjects will be found in clauses with tense and agreement, while PRO will be required if either tense

or agreement is lacking. Landau is refreshingly up front about the explanatory status of (5): “The R-assignment rule is an honest stipulation; it does not pretend to be derived from deeper principles, although such a possibility obviously exists” (Landau 2004:842). Still, the system that he develops achieves a wide range of descriptive coverage and constitutes progress toward an explanation. What we would like to do is take it as a starting point and work on the stipulated parts, trying to replace them with explanations.

This is not something that Biswas attempts to do. Rather, she adopts Landau’s system and applies it more or less unchanged to the novel Bangla data. The insights that she does introduce, described above, are independent of her use of Landau’s calculus, and the distinctions that she phrases crucially in the terms of Landau’s theory are actually obscured by the process rather than being illuminated. So e.g. she posits an abstract [+Agr] specification for Temporal IPL clauses but an abstract [–Agr] for Purpose IPL clauses. This is meant to account for the fact that overt subjects and *pro* are found with the former, as opposed to only PRO with the latter. But there is no attempt to explain why this particular difference should obtain between the clauses or why it correlates with any of their additional distinctive properties.

In particular, contrary to what might be expected from a naïve idea of what [+Agr] means, the clauses show no distinction in terms of morphological agreement, both lacking it entirely. Instead, as discussed above, the difference is that temporal adjuncts impose a restriction on the tense of the matrix clause, while purpose adjuncts do not. Biswas does technically relate this distinction to the Agr specifications, such that temporal infinitives are not just [+Agr], but [+Agr: *realis*], with the *realis* specification being responsible for the tense effects. Note, however, that this simply stipulates a connection between the relevant temporal effects and the abstract feature ultimately responsible for licensing a [+R] subject. There is no real insight into the connection between the two or predictive power about what combinations we might expect to find elsewhere. The problem lies at least in part in Biswas’ desire to shoe-horn the Bangla facts into the categories of Landau’s system. [+Agr] plays a crucial role in the R-assignment rule in (5), thus she is compelled to use it, but it is clear that discussion of [Agr] features is more a distraction than a help in dealing with these examples.

Indeed, the role of [Agr] features is a particular shortcoming of Landau’s theory, and the locus of a great deal of stipulation which we would most like to reform. Recall that, according to (5), a clause needs both tense and agreement to license a [+R] subject. A series of works since at least Stowell (1982) has presented evidence that there are systematic correlations between the temporal interpretation of different kinds of infinitival clauses and the kinds of subjects that they allow. In an ideal world, we could explain the distribution of PRO and overt subjects purely in terms of tense—clauses with overt subjects would have temporal semantics of a certain kind that would be lacking in clauses with OC PRO. Of course things are not that simple, and we find mismatches between temporal interpretation and subject possibilities.

This is where the [Agr] feature in Landau’s system enters the picture, as a way to handle situations where there is clear evidence for the presence of a [T] feature, yet no [+R] subject is allowed. Such an approach seems quite reasonable, since finiteness is traditionally defined in terms of the combination of tense and agreement (or the lack

thereof). The trouble comes in when we consider the connection to morphology. Following a long tradition of generative work, Landau understands both [T] and [Agr] features as abstract syntactic objects which have an indirect relationship with concrete inflectional morphology. In other words, overt morphology provides potential evidence for the presence and valuation of such features, but we should not expect a one-to-one relationship between morphological forms and underlying features. If there is a mismatch between syntactic behaviors and overt morphology, we posit values for these features based on the syntactic evidence, overriding the evidence from the morphology. Now, when applied to [T] features, this approach is well-motivated and has strong potential for independent confirmation, because tense features are not posited solely to model the distribution of subject types. Rather, they are independently needed to model temporal semantics. The actual temporal semantics of a clause crucially restricts what tense features we might posit in order to account for subject distribution. We will only take a theory of [T] features to be insightful to the extent that it can pick out and capture parallels between subject possibilities and independently observable facts about tense interpretation.

The situation with [Agr] features is fundamentally different, however, because unlike [T] features, they have no clear semantic import. If—like Landau and Biswas—we do not expect them to directly account for overt agreement morphology, then the only unambiguous evidence we can have for their presence is the distribution of subject types. Of course, if we can simply assume a [+Agr] feature in every clause that allows an overt or *pro* subject, with no way to independently test for the presence of that feature, then we can straightforwardly describe the appearance of such subjects by stipulation, but we will have achieved no insight. There is, in fact, no claim or hypothesis being made about the distribution of subjects. It would be preferable if we could claim that [+R] subjects are restricted to positions triggering actual morphological agreement—this would be a non-trivial and testable hypothesis with interesting consequences. It is clear, however, even from a relatively cursory examination of the cross-linguistic facts, that this is untenable. We are left, then, to search for something else that we can tie to the distribution of [+R] subjects. We would like to maintain the connection between the presence of certain tense features and the possibility of overt subjects, yet we need some additional factor to be at work in order to handle cases where no [+R] subject is allowed, even though the necessary temporal material seems to be present. We can call this additional factor [+Agr], but that name does not add any additional insight; if anything, it makes things more opaque, since it suggests a relationship with agreement that simply does not hold.

In what remains of this commentary, I will propose an alternative approach which replaces Landau's bundle of [T] and [Agr] features that are localized on a single Infl head, with a hierarchy of functional heads, the presence or absence of which defines the different clause types and can hopefully bring us closer to an explanation of their subject-taking and other properties.

5 Towards a more grounded scale of finiteness based on clause size

In this section, I will develop a programmatic proposal about how we might implement a nuanced scale of finiteness and use this to achieve a more insightful analysis

of the distribution of subject types. I will take as my starting point the main empirical insights of SM09 and the generalizations proposed there about classes of embedded clauses defined in terms of subject types, as well as the basic theoretical approach laid out therein. I will explore a possible direction for the further development of that approach in terms of cartography and clause size, following an analytic strategy with a long pedigree, and show that it can be used to model some of the core Bangla patterns investigated by Biswas in a more insightful way, integrating them with the patterns reported for other languages.

Perhaps the most important finding of SM09 was that some clause types show a productive alternation between [+R] and [-R] subjects, roughly speaking between obligatorily controlled PRO and disjoint overt subjects. Examples include the complements of 'want'-class verbs in Tamil, Malayalam and Sinhala, and adjunct infinitives in Middle English, Tamil and Sinhala. In addition, there are clause types which require a [+R] subject, like prototypical finite clauses, and those which require a [-R] subject, like the infinitival complements of 'try'-class verbs in English and Tamil. At the very least, we thus need to be able to make a three-way distinction in clause types, which we can refer to (based roughly on a usage adopted by Landau) as **anaphoric** (only [-R] subjects), **dependent** (either [-R] or [+R] subjects) and **independent** (only [+R] subjects). SM09 argued that the alternation found in dependent clauses should be taken as the default situation, with both anaphoric and independent behavior arising only in the presence of a functional head requiring one subject type or the other. This is implemented in terms of different types of C, which may themselves be selected by embedding verbs, and which can bear uninterpretable features requiring the presence of a [+R] or [-R] subject. This aspect of SM09's theory was explicitly preliminary, and I would like to further develop it here, both to explore the differences between the clause types and to see how they might be implemented structurally.

I suggest that we translate SM09's proposal of distinct kinds of C in anaphoric and independent clauses into a cartographic approach with a more articulated left periphery. We are then led to suppose that we are dealing with two (or more) distinct head positions in the C layer, and thus perhaps two (or more) different sizes of clause. This leads to the question of what the relative sizes of the different clause types should be. From a naïve perspective, we might guess that the dependent clauses would have a size intermediate to the anaphoric and independent ones since, in some sense, they combine aspects of both. I will suggest below that this correctly characterizes **some** dependent clauses. However, if we take seriously the idea that the alternation of the dependent clauses is the default behavior, we might expect it to arise in different ways—i.e. there may be more than one type or size of dependent clause. Indeed, if both independent and anaphoric clauses involve extra restrictions on the subject type, and these restrictions come from the presence of additional functional heads, then the smallest clause type lacking all such material should actually be one of the dependent types.¹ This may seem counterintuitive, but it is important that we rid ourselves of

¹ Actually, there might be an even smaller structure if we adopt Wurmbrand (2001)'s analysis of certain kinds of control structures as being simply VP without vP, i.e. not even projecting a position for agentive subjects. Such clauses might, at first blush, look anaphoric, since they will never allow disjoint agentive subjects, but they should allow 'subjects' of unaccusatives to appear. This may be what is going on with

any residue of traditional Case-theoretic thinking about the distribution of PRO. One of the other thrusts of SM09, also argued for by Landau (2006), Sigurðsson (2008) and much other work, is that the distribution of PRO has nothing to do with Case. In particular, there is no reason to think that overt DPs require explicit licensing any more than PRO does, so we should not assume that clauses with overt subjects must contain structure over and above that of control infinitives to Case-license the subject.

There is indeed some suggestive evidence that the smallest clauses are generally dependent in the sense of allowing both [+R] and [−R] subjects. We can mention here the heavily reduced infinitives that show up in the complements of causative and perception verbs in many languages like the German (6a), (see e.g. Wurmbrand 2001) or in special root environments (see Schütze 1997 for discussion of Mad Magazine sentences like (6b), and Progovac 2006, more generally).²

- (6) a. Ich_i ließ Jörg/PRO_{i,*j} mehr Wein einschenken.
 I let PRO/Jörg more wine pour
 ‘I had Jörg pour more wine./I had more wine poured.’
 b. Me/PRO eat cheese curls? Never!

There is a long tradition showing that these clauses are structurally reduced in comparison to e.g. control infinitives. A simple indication is that English control infinitives allow the aspectual auxiliary *have*, while the bare infinitives do not:

- (7) a. I_i’ll try [PRO_{i,*j} to have finished by tomorrow].
 b. *I saw him have eaten a sandwich.
 c. *Me have eaten cheese curls? Never!

It is thus more or less standard to say that, while finite clauses and control infinitives contain functional material up to the CP level, bare infinitive complements of causative and perception verbs are vPs or even smaller (see e.g. Wurmbrand 2001).³ Again, these constitute only one type of particularly small dependent clause, henceforth **Little Dependent**. The more familiar ones, including ‘want’-class complements and certain adjunct infinitives, henceforth **Big Dependent**, must involve larger structures which we will return to further below.

the Bangla perfective clauses which, as Biswas notes, do not allow disjoint subjects unless the predicate is non-volitional and hence unaccusative.

²ECM and raising infinitives may fit in here as well, though it’s less obvious that they show dependent behavior. The crucial assumption is that, what is relevant is not the distribution of PRO alone, but of [−R] DPs, which also includes anaphors. The relevant fact then is that ECM clauses allow both clear [+R] subjects like R-expressions and [−R] subjects like anaphors. Raising (and passivized ECM) infinitives allow the trace of either a [+R] or [−R] subject, depending on the nature of the matrix predicate:

- i. Bill_i believes himself_{i,*j}/Geordie_j to be a genius.
 ii. Bill_i hopes PRO_{i,*j} to seem <PRO> to be smart.
 iii. Bill seems <Bill> to be smart.

ECM and raising infinitives thus allow the equivalent of an alternation between overt subjects and PRO, and should be considered dependent.

³ECM and raising infinitives are usually thought to be intermediate, standardly TPs.

Anaphoric and independent clause types will then be larger than the bare infinitive dependent clauses. There is also good reason to think that, among these two, independent clauses are the larger, since they typically allow material disallowed in anaphoric clauses, e.g. independent tense specifications (8), overt complementizers (9) and fronted elements in the left periphery (10):⁴

- (8) a. Yesterday I thought I would go shopping tomorrow.
 b. *Yesterday I tried to go shopping tomorrow.
- (9) a. I think that I will win.
 b. *I tried that/for to win.
- (10) a. I think that, **this paragraph**, you should expand a bit.
 b. *I tried, **this paragraph**, to expand a bit.

The question is how to implement this in specific structural terms. Imagine the following simple proposal for the three clause types we've discussed so far:⁵

- (11) a. **Dependent:** [_{vP} [_{VP}]]
 b. **Anaphoric:** [_{C_{Ana}P} [_{TP} [_{vP} [_{VP}]]]]
 c. **Independent:** [_{C_{Ind}P} [_{C_{Ana}P} [_{TP} [_{vP} [_{VP}]]]]]]

Under this analysis, the structure of Little Dependent clauses would be literally contained within the structure of anaphoric clauses, which in turn would be literally contained within the structure of independent clauses. This is clearly what we would like to maintain in a broadly cartographic approach, but it's not easy to see how to derive the defining properties of the clause types from such structural assumptions.

The obvious approach, whereby C_{Ana} directly requires a $[-R]$ subject and C_{Ind} a $[+R]$ subject, perhaps via $[u-R]$ and $[u+R]$ features, won't do it. SM09 used such features on the C heads characterizing the clause types, but this only worked because, in their system, the two C heads alternated with one another in the same position. In the approach being considered here, C_{Ana} will still be present structurally below C_{Ind} in independent clauses, and it is always going to be closer to the subject in Spec- vP or Spec- TP than C_{Ind} is, so it will get first crack at controlling the properties of the subject, under Relativized Minimality. If it forces the local DP in its c-command domain to be $[-R]$, it's not clear how this could be undone by a higher C_{Ind} head. We thus need to take a more subtle tack.

Let's think then about what it means for a DP to be $[+R]$ or $[-R]$, and for a head or structure to require a $[+R]$ or $[-R]$ subject DP. A simplistic but plausible idea is that $[+R]$ DPs must be interpreted relative to a context, mediated by their person features. If a DP is first person, its reference can only be properly determined by knowing who the speaker is in the relevant context. If a DP is third person, its reference can only be determined by knowing who the speaker and the hearer are, so as to exclude them

⁴There is variation in the details, both across languages and between specific sub-types of independent and anaphoric clauses, but the generalization is that specific independent clause types often contain elements that are lacking in specific anaphoric clause types, while the reverse is quite rare.

⁵As noted above, ECM and raising structures could be included as TPs, between (11a) and (11b).

both as possible referents. [-R] DPs, on the other hand, must be interpreted relative to another DP, specifically as coreferent with it. Now, the relationship between a [-R] DP and its antecedent (binding or control) is standardly treated syntactically, hence subject to standard syntactic restrictions like locality, minimality and c-command. A growing strand of work has argued that the relationships between (the person features on) DPs and the context is also at least partly syntactic, and that the context is represented in the syntactic structure (see e.g. Bianchi 2003; Sigurðsson 2004; Baker 2008; Giorgi 2010; Sundaresan 2012). If we take this seriously and implement it in a fairly simple way using functional heads in the left periphery, we can actually get the requirement for [+R] or [-R] subjects in different clause types to fall out of the referential requirements of those DPs and from the presence or absence of the relevant functional heads, both interacting with standard minimality and (phase) locality.

Consider again the structure in (12). We will need to add additional heads as we proceed, but two heads above TP are the bare minimum for distinguishing three clause types, so we'll start with this.

(12) [C_{Ind}P [C_{Ana}P [TP ...]]]

Now we make the following assumptions. *C_{Ind}* is where contextual information is represented (clearly related to the *A* heads of Sigurðsson 2004). Every [+R] DP must be interpreted with respect to such a head, which means that every such DP must be in the same phase as *C_{Ind}*.⁶ Every [-R] DP, on the other hand, must be phase-local to a c-commanding antecedent to be interpreted as coreferent with it. This could be another DP in the case of local binding, but it could also be *C_{Ana}*, the function of which would be to mediate anaphoric relationships over longer distances in essentially successive-cyclic fashion. I.e. it can bind a lower [-R] DP, but then it must ultimately be bound by a DP higher up, allowing us to implement control and the equivalent of long-distance binding under well-defined conditions.⁷ Then we need to adapt the standard idea that CP is a phase to our articulated left periphery, such that the highest C head present in a given clause defines a phase, while any lower ones do not. In a clause with the full complement of functional heads, *C_{Ind}* will define the phase, while in a smaller clause where *C_{Ind}* is lacking, *C_{Ana}* will define the phase.

All of this can now be put together to get most of the relevant basic patterns. A Little Dependent clause contains neither C head, thus it provides neither a context for the interpretation of a [+R] subject, nor a binder for a [-R] subject. Crucially, though, lacking the C heads, it also does not contain a phase boundary, thus its highest DP can be interpreted relative to material in the next higher clause. I.e. it can be bound

⁶I am assuming that the interpretive dependency is mediated by a syntactic one, i.e. by an Agree relation which must be established locally. But the main points of the discussion should hold equally well if it were a purely interpretive relationship holding at LF, as long as LF interpretation is also done phase-by-phase.

⁷Alternatively, anaphors are always bound by functional heads like *C_{Ana}*, which are in turn bound by the DP antecedents, i.e. that there is never direct binding of one DP by another (as proposed for long-distance anaphora in Tamil and languages like it, by Sundaresan 2012). This may even be a point of variation (say between the so-called SELF- and SE-anaphors).

by a DP or interpreted relative to the context represented in the matrix C_{Ind} , thus is free to be either [+R] or [-R]. An anaphoric clause has a C_{Ana} head, but no C_{Ind} head. A [+R] subject will not be able to be properly interpreted, because there is no local representation of the context; yet, the clause still constitutes a phase due to the presence of C_{Ana} , thus matrix C_{Ind} is too far away. The presence of a phase boundary also means that a [-R] subject will not be able to be bound directly by a DP in the matrix clause, but it can be bound locally by the C_{Ana} head. C_{Ana} must, in turn, be bound by something higher, but since it is at the edge of the phase, it will count as sufficiently local to a DP in the matrix clause. The subject of an anaphoric clause can thus only be [-R]. Finally, an independent clause with the full complement of C heads will also constitute a phase, again blocking any direct relationship between the embedded subject and anything in the matrix. Due to the presence of the local C_{Ind} head, however, a [+R] DP can be interpreted directly relative to the local context. There is also a C_{Ana} head present, so a [-R] DP can also be bound locally, but a problem arises when the C_{Ana} head then seeks a binder itself. Given the presence of the C_{Ind} head, C_{Ana} is no longer at the phase edge, and thus cannot be bound by a DP in the matrix clause. Since there is no other local DP which c-commands C_{Ana} , it fails to be bound, and the interpretation of the embedded [-R] subject is ultimately unsuccessful. Thus the subject of an independent clause can only be [+R].

The careful reader may have noticed an issue for object DPs, not just in embedded clauses but generally. If all [+R] DPs must be in a phase-local relationship with a head in the left periphery, and if vP constitutes a phase, then how can a [+R] direct object be successfully interpreted? Even in a clause that has a C_{Ind} in its left periphery, there will be at least one phase boundary (at vP) separating the two. The same issue will arise for the [+R] subjects of dependent clauses, which have the matrix vP phase boundary intervening between themselves and matrix C_{Ind} . The simplest way to deal with this is to posit additional heads in the vP layer which can do the same work as C_{Ind} and C_{Ana} do in the left periphery. This will seem at first like a serious complication to add to the theory. However, I would like to suggest here that positing such material in the vP layer allows us a tidy account of certain additional relevant facts.⁸ Note that both [+R] and [-R] DPs are generally allowed in object positions, again taking overt anaphors to be [-R]. This is independent of the finiteness of the clause and what sort of subject it allows:

- (13) a. Bo_i smacked Luke j .
 b. Bo_i smacked himself $_{\{i,*j\}}$.
- (14) a. Bo_i tried [$PRO_{\{i,*j\}}$ to smack Luke j].
 b. Bo_i tried [$PRO_{\{i,*j\}}$ to smack himself $_{\{i,*j\}}$].

The independence from finiteness is a (weak) indication that the interpretive needs of the object are being handled inside vP . If we assume something like v_{Ind} and v_{Ana} to do this, we must ask why the result is typically an alternation between [+R] and [-R] objects. Consider what happens in a clause with the full complement of v heads:

⁸See also Sundaresan (2012:Part III) on the need for such functional material in order to implement local anaphora in certain languages.

- (15) [... [TP DP_{subj} [*v*_{Ind}P <DP_{subj}> [*v*_{Ana}P [VP ... DP_{obj}]]]]]

Now, a [+R] object will be licensed here—just like a [+R] subject in an independent clause—by the presence of a local contextual specification, here on *v*_{Ind}. The status of a [−R] object is, however, different from that of a [−R] subject. Again, indirect binding by a DP in a higher phase via the *v*_{Ana} head will fail, because that head is not in the phase edge, thus is not visible to material in the CP phase. However, local anaphora is always possible for objects because the subject starts out in the *v*P phase, thus it can bind the object (perhaps via the intermediary position of the *v*_{Ana} head) before moving out of the phase to its surface position. As a result, we don't expect to find anything quite like the behavior of independent clauses at the *v*P level.

That leaves the possibility of 'anaphoric' *v*Ps, i.e. *v*Ps with obligatorily [−R] objects. Consider the following structure, where *v*_{Ana}P is present, but *v*_{Ind}P is not:⁹

- (16) [... [TP DP_{subj} [*v*_{Ana}P <DP_{subj}> [VP ... DP_{obj}]]]]]

Again, a [−R] object can be bound, either directly by the subject, or indirectly via *v*_{Ana}. A [+R] object, however, will have no such luck. In parallel with what we've assumed for the C layer, *v*_{Ana} should mark a phase boundary, preventing the object from getting into a relationship with any contextual specification at the C layer. And given the lack of *v*_{Ind}, no contextual specification will be present in the *v* layer, thus [+R] objects will have no way of being interpreted and will be ruled out. The theory thus predicts structures where only [−R] objects are allowed. I suggest that this is exactly what we find with inherently reflexive predicates, like English *behave*:

- (17) John_i behaved himself_i/*Bill_j

Positing *v*_{Ind} and *v*_{Ana} heads thus allows us a straightforward account of the distribution of [+R] and [−R] objects, including how they differ from [+R] and [−R] subjects. I would also submit that something like this is essentially forced on us if we assume that the contextual interpretation of DPs is handled in phase-local fashion.

Let us turn then to the additional clause types which we set aside above, including 'want'-class complements and adjunct infinitives. In terms of the types of subjects that they allow, at least in languages like English and Tamil, they are clearly dependent. However, unlike the Little Dependent clauses, they are clearly relatively large according to other diagnostics—certainly larger than the anaphoric clauses. For example, their temporal reference can be independent of that in the matrix clause:

- (18) a. Yesterday I wanted to go shopping tomorrow.
b. *Yesterday I tried to go shopping tomorrow.

If we wish to maintain the approach to distinct subject-licensing behaviors in terms of clause size, we must recognize that these clauses are indeed structurally distinct from the Little Dependent clauses. Hence, we can call them Big Dependent, and suppose

⁹One way to allow this is if functional sequences cannot have gaps (i.e. must be monotonic), but can be truncated at the upper end of each phase. So, just as heads at the top of the C domain can be missing, so can ones at the top of the *v* domain, but if a given C or *v* head is present, all heads below it in the same phase must also be present.

that they are the clauses with a size intermediate to the anaphoric and independent types.

In order to get something of this intermediate size to allow both [+R] and [-R] subjects, we'll have to modify the system we've set up somewhat. As things stand, adding the C_{Ind} head above a structure containing the C_{Ana} head simultaneously makes a [+R] subject possible (because it contains a representation of the context) and a [-R] subject impossible (because it constitutes a phase boundary). It seems now that we'll have to split these properties of C_{Ind} over two distinct heads, and say that Big Dependent clauses include only the lower head which makes a [+R] subject possible, call it C_{Con} (to suggest context), while independent clauses additionally contain the higher one which makes a [-R] subject impossible, call it C_{Loc} (to suggest a boundary for locality). There are a few ways that we could go about doing this, and I currently have no evidence to decide among them. Since we're already in rather speculative territory here, I will not develop this further in any detail, at present.¹⁰

Of course, the discussion in this section has been preliminary, but the goal is to look for something concrete which we can tie the distribution of subject types to, instead of abstract Agr. We want something that can at least make testable predictions, so that we have an actual falsifiable hypothesis—something the unrestricted assumption of abstract Agr does not give us. The particular kind of approach I have been considering here allows us to make predictions by using the logic of the cartographic approach. I am proposing something like (19) as the relevant portion of the hierarchy of projections, expanded from (12) above to allow for Big Dependent clauses and with the labels X, Y, Z, and W labeling intermediate zones where we might expect additional (e.g. temporal) functional heads and modifiers to be found:

$$(19) \quad X > C_{Loc} > Y > C_{Con} > Z > C_{Ana} > W > T > v \dots$$

Given plausible (cartographic) assumptions about the monotonicity of the functional sequence, upper parts of this hierarchy can be lacking in particular clause types, but only if all higher parts are also lacking. I have suggested, e.g., that Little Dependent clauses go up to v , anaphoric clauses go up to C_{Ana} , Big Dependent clauses go up to C_{Con} , and independent clauses go up to C_{Loc} . This allows us to make predictions based on specific proposals about what heads appear in the X, Y, Z and W regions. Anaphoric, Big Dependent and independent clauses should include the projections in the W region, while Little Dependent clauses may lack them. Independent and big dependent clauses should include the projections in the Z region, while these must be lacking in Little Dependent clauses and perhaps in anaphoric clauses. More generally, everything in Little Dependent clauses should also be present in anaphoric clauses, Big Dependent clauses and independent clauses. Everything in anaphoric clauses should be present in Big Dependent and independent clauses, and so forth. The presence of these projections should then be diagnosable in terms of the semantics of the clauses (especially TMA semantics) and in the possibility of certain adverbial and functional elements (like aspectual auxiliaries). Disconfirming evidence will

¹⁰One possibility is that Big Dependent clauses involve head movement of C_{Ana} to C_{Con} , bringing the former into the phase edge and thus allowing it to be bound by something in the next phase up. The extra C_{Loc} in independent clauses would place the phase edge out of the reach of even a moved C_{Ana} .

force us to revise our hypotheses about the specifics of the hierarchy and/or the size of particular clause-types, or perhaps, ultimately, even to abandon this approach.

This is in contrast to an abstract [Agr] theory, which can mechanically avoid disconfirmation by positing or not positing the relevant (undiagnosable) [Agr] features wherever needed to describe the distribution of [+R] and [-R] subjects. Note, furthermore, that the account here allows us to derive an additional feature of L04's analysis that he had to stipulate—the fact that the presence of certain temporal features is a necessary but not sufficient condition for the licensing of [+R] subjects. For Landau, this is simply part of the R-assignment rule reproduced in (5) above, according to which [+R] is licensed by [+T], but only in conjunction with [+Agr]. In the account here, the relevant temporal specifications will have to come in somewhere in the region labelled Z in (19) above. So (some) anaphoric clauses may lack the specification, but all Big Dependent and independent clauses will have to include it.¹¹

6 Back to Bangla

Let us return then to the patterns in Bangla non-finite clauses that Biswas elucidates in her paper. A final advantage of the cartographic approach I have just sketched is that all six of the clause-types that she identifies can be reasonably placed on the scale proposed. The temporal and conditional adjuncts, which allow [+R] overt and *pro* subjects, but apparently not [-R] PRO, must be somewhere in the X or C_{Loc} level of (19). Fully finite clauses with overt tense marking and agreement are presumably even larger, but these clauses must already go up to the level that not only allows [+R] subjects, but blocks [-R] ones. Complements of 'try'-class verbs must go up to C_{Ana} , and really no higher. This allows them to be just large enough to block [+R] subjects, but not so large as to allow independent temporal modification. Purpose and perfective adjuncts as well as the complements of 'want'-class verbs must go up to a level somewhere in the Z region. They must also include at least C_{Ana} but not C_{Con} , since they also block [+R] subjects, but must include some material that is not present in the 'try'-class complements since they *do* allow temporal modification and, as Biswas reports, partial control. Note that English and Tamil 'want'-class complements are quite similar, also including the material in the Z region necessary for partial control and temporal modification, but crucially going just a bit higher to include the C_{Con} head that makes [+R] subjects possible.

In a sense we are thus translating Biswas' [+T] into the presence of the Z layer, and her [+Agr] into the presence of something in the Y layer or at least C_{Con} . The difference is that, given the assumptions we are making about a strict functional hierarchy and restrictions on possible clause sizes in terms of that hierarchy, our structural proposal makes clearer predictions about the possible cross-linguistic variation in these specifications and how they should lead subject licensing to interact with temporal interpretation and other independently observable factors. Biswas' contribution to this special issue provides us with the kind of careful analysis of relevant

¹¹Of course, the current theory can also correctly handle the Little Dependent clauses which clearly lack the relevant temporal specification, yet still allow [+R] subjects.

patterns in a given language that is necessary to actually test such predictions, and more such work on a wider array of languages is sorely needed to further develop the kind of approach laid out here. Whether the predictions made will stand up in the face of the data from those languages is, of course, a different question.

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