

Towards a theory of the typology of clausal dependency

Zentrum für Allgemeine Sprachwissenschaft, October 1st, 2013

Thomas McFadden
Universitetet i Tromsø
thomas.mcfadden@uit.no

1 A puzzle from language comparison

English infinitival clauses can have rather different properties depending on the matrix predicate under which they're embedded.

- E.g., under the verb *try*, a complement infinitive cannot have an overt subject of its own, but instead has a silent subject obligatorily interpreted as co-referent with the matrix subject:

(1) Tore_i tried [PRO_i/*Eirik_j to win the contest].

- But under the verb *want*, an overt subject, disjoint in reference from the matrix is possible as well:

(2) Tore_i wanted [PRO_i/Eirik_j to win the contest].

It is reasonable to think that there is a semantic basis to this distinction:

- ☞ I.e. there is something about the meaning of *try* that implies identity between the 'trier' and the subject of what is tried, but no such implication with *want*.

This leads us to expect that verbs with similar meanings in other languages should have similar effects on their clausal complements.

- This is partially borne out, e.g. in the Dravidian language Tamil, where we see the same contrast with verbs meaning 'try' and 'want' (Sundaresan and McFadden 2009):

(3) Raman_i [PRO_{i,*j}/*Anand sa:datt-æ sa:ppidæ] pa:-tt-a:n
Raman PRO_{i,*j}/*Anand rice-ACC eat-INF try-PST-3MSG
'Raman tried (*Anand) to eat rice.'

(4) Champa-vŭkkŭ_i [PRO_{i,*j}/Sudha_j orŭ samosa-væ sa:ppid-æ] venɖ-um.
Champa-DAT PRO/Sudha a samosa-ACC eat-INF want-N.3SG
'Champa wants (Sudha) to eat a samosa.'

However, in certain other languages like Bangla, we find a different pattern, with overt, disjoint subjects ruled out in the non-finite complements of both ‘try’ and ‘want’ (Biswas to appear, formatting mine):

- (5) Rik_i [PRO_{i,*j}/*Sudha oSudh khe-te] ceSTa kor-l-o
 Rick PRO_{i,*j}/*Sudha medicine eat-IPL try do-PST-3
 ‘Rick tried (*for Sudha) to take medicine.’
- (6) Rik_i [PRO_{i,*j}/*Meri jitte] ca-y.
 Rick PRO_{i,*j}/Mary win-IPL want-PRS3
 ‘Rick wants (*for Mary) to win.’

In order to understand what might be going on here, we need a better understanding of how clausal embedding and dependency work.

2 Some background on clausal dependency

Existing theories of clausal dependency are inadequate and need to be overhauled. The basic problem can be summarized as follows:

- ☞ Traditional theories are built to deal with a binary finite/non-finite distinction.
- ☞ But in fact, there are multiple dimensions of dependency, and they do not match up with each other completely.
- ☞ Even within individual dimensions, at least three distinct levels of dependency must be distinguished.

Let’s walk through these points with some examples. 7a has a prototypical finite embedded clause, 7b a prototypical non-finite one:

- (7) a. Tore_i said [that he_{i/j} will win the contest].
 b. Tore_i tried [PRO_i/*Eirik_j to win the contest].

Note however that there are two different things going on here:

1. In 7a, the embedded clause has its own overt subject, which can be co-referent with the matrix subject *Tore* or refer to someone else. In 7b, the embedded subject cannot be expressed overtly and is obligatorily co-referent with the matrix subject *Tore*.
2. The embedded verb in 7a also has its own tense marking, and its temporal reference can vary independently of the matrix, as the adverbials in 8a show. The one in 7b, however, lacks tense marking and cannot vary independently, as 8b shows.

- (8) a. Yesterday Tore said [that he will win the contest tomorrow].
 b. *Yesterday Tore tried [PRO to win the contest tomorrow].

- ☞ Temporal and referential dependencies often pattern together, as here.
- ☞ But we will see that they sometimes do not, thus it's important to keep them distinct rather than lumping them together in 'finite' vs. 'non-finite'.

The simple 'finite'/'non-finite' dichotomy also fails to take into account the existence of more than two levels of dependency along specific dimensions (see e.g. Wurmbrand 2001, Landau 2004, 2006, Adger 2007, Sundaesan and McFadden 2009, Szabolcsi 2009).

One easy way to see the problem is in terms of the distribution of overt subjects. Traditional Case theory separates clauses into two broad types:

- i. 'finite' ones which license their own overt (nominative) subject
- ii. 'non-finite' ones which do not license an overt subject on their own, thus only allow PRO (or potentially an overt subject licensed from the outside as in ECM).

- ☞ In fact, there is evidence from several languages for a third clause type, which involves an alternation between controlled PRO and overt non-coreferent subjects.

One clear example comes from adjunct infinitives in Tamil (see Sundaesan and McFadden 2009, for examples from other languages):

- (9) a. [PRO_i/*_j sa:datt-ai sa:ppid-a], na:n_i ve|iya poo-n-een
 PRO rice-ACC eat-INF, I.NOM outside go-PST-1SG
 'I went out (in order) to eat rice.'
- b. [avan sa:datt-ai sa:ppid-a], na:n ve|iya 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.'

We actually get the same alternation in English gerundivals (Pires 2007):

- (10) a. [PRO_i/*_j having no hot sauce] I_i had to buy some more.
 b. [Pete_j having no hot sauce] I_i had to buy some more.

The problem that alternations like this raise is straightforward:

- ☞ The licensing requirements of overt subjects and PRO are supposed to be mutually exclusive, whether thought of in terms of (null) Case, government or other standard approaches.
- ☞ Yet we have here clause types which seem to equally license either, with no apparent morphological or interpretive differences, and no possibility that something external like ECM is getting in the way.

We can also clearly identify at least three distinct levels of interpretive dependency, in both subject reference and temporal interpretation.

- ☞ In principle, these can be fixed as identical to something in the matrix clause, restricted relative to material there, or completely independent.

Consider e.g. the distinct reference possibilities of the embedded subjects depending on the choice of selecting predicate in the examples in 11 (involving the phenomenon of ‘partial control’, Landau 2004, etc.):

- (11) a. $Tore_i$ said [that $they_{i+}/j$ would gather by 10].
 b. $Tore_i$ expected [$PRO_{i+}/*j$ to gather by 10].
 c. * $Tore_i$ managed [PRO_{i+} to gather by 10].

- The finite complement of *say* in 11a has an overt subject that is independent of the matrix – it can refer to a plurality including *Tore* (indicated by Landau’s “i+” notation), but it can also refer to a plurality excluding him.
- The infinitival complement of *expect* in 11b, has a PRO subject. *gather* forces it to be interpreted as plural, but the plurality must include the matrix subject *Tore*.
- In 11c, we get a problem. The infinitival complement of *manage* requires its PRO subject to be identical to the matrix subject, but since the latter is singular, this is incompatible with *gather*’s requirement that its subject be (semantically) plural.

Note that there is a relationship between these different types of dependency. At least to a first approximation:

- The clauses with mandatory overt subjects are the ones whose subject has completely independent reference.
 - Those with alternation between overt subjects and PRO are the ones whose subject has reference that depends on that of the matrix, i.e. allow partial control.
 - Those with obligatory PRO are the ones whose subject is anaphoric on the matrix, i.e. require exhaustive control.
- ⇒ Sundaresan and McFadden (2009) thus adapted Landau’s terms **independent**, **dependent** and **anaphoric** to label these three different clause types.
- ⇒ I will retain these terms for now, though I will eventually split the dependent class into two distinct types.

So we’ve established that we need to go beyond the binary finite/non-finite distinction, but there’s a lot that we still need to figure out in the empirical arena:

- ? How many distinct levels of clausal dependency are there along each dimension?
- ? What implicational relationships are there across dimensions?
- ? To what extent are the properties of a complement clause predictable on the basis of the properties of the selecting predicate?

- ? What cross-linguistic regularities can be observed in the inventories, properties and distribution of clause types?

We then need a theory that can accommodate our findings on each of these questions.

- In today's talk, I will consider what that theory must look like given the key results of empirical work that's already been done.
- I'll introduce a framework for a better theory that relates dependency to clause size, which has some promise, and at the very least will serve as a background for the necessary empirical work.
- I'll then outline one potential implementation of the basic clause-size idea in order to demonstrate how it could in principle account for the patterns of dependency we find.
- Finally, I'll return to the data about 'try' and 'want' from Bangla and other languages to show the kinds of predictions the new theory makes and how we can test them.

3 Featural vs. structural approaches

For the most part, previous approaches to the dependency properties of embedded clauses have been **featural** in a relevant sense.

- That is, the crucial distinctions between various clause types have been expressed in terms of the presence or values of particular features.
- So e.g. in Martin (2001)'s system (adopting ideas from Chomsky and Lasnik 1993), clauses differ in terms of the specification of [\pm tense] and [\pm finite] on T. For Landau (2004) it is a matter of [\pm T] and [\pm Agr] on Infl.
- For each, there is then a set of rules for determining subject-licensing properties from the particular combination of features in each clause type.

The problem is that in such systems the relationships between features are always stipulated, and it is not clear how to derive them in a principled way.

- ☞ Landau posits a rule according to which [+R] (i.e. non-PRO) subjects are only licensed by [+T, +Agr], and Martin states that "[+tense, +finite] checks nominative Case, [+tense, -finite] checks null Case, and [-tense, -finite] does not check Case at all" 2001, 147.
- ☞ But there is nothing in the form of the theory that yields any insight into why these should be the actual combinations.

I suggest instead that we look to analyses of clausal differences that are **structural**.

- That is, the crucial differences between clause types have to do with the presence or absence of specific pieces of syntactic structure.

Take a relatively simple example, where such an analysis is obvious:

- We can form analytic causatives in English with *make* followed by the bare form of the main verb, or with *cause* followed by a *to*-infinitive (12).
- According to various diagnostics, the latter is more independent than the former, allowing e.g. independent temporal modification (13) and aspect (14).

- (12) a. Joanne made Jeff work late.
 b. Joanne caused Jeff to work late.
- (13) a. *Yesterday Joanne made Jeff work late tomorrow.
 b. Yesterday Joanne caused Jeff to work late tomorrow.
- (14) a. *Joanne will make Jeff have worked late.
 b. Joanne will cause Jeff to have worked late.

- Given the presence vs. absence of *to*, the obvious way to analyze the differences here is in terms of a difference in the structures of the embedded clauses:
- We assume that the complement of *make* has a heavily reduced structure, consisting perhaps of little more than a *v*P. The fact that it is restricted in the ways mentioned above then need not be stipulated, but is a necessary consequence of its structure.

☞ Having no T, it lacks any distinct temporal specification that could be modified independent of the matrix.

☞ Aspectual auxiliaries like perfect *have* belong somewhere in the zone between T and *v*, so there is no room for them either.

- The complement of *cause*, on the other hand, has a structure which is larger – including e.g. whatever head *to* is the realization of – plausibly going up to T. This then immediately predicts its lack of relevant restrictions.

☞ Having its own T, it **does** allow distinct temporal modification.

☞ And it has space for its own aspectual material.

This structural approach to clause types is in principle more interesting than the featural one, and in what follows I will suggest that we expand it and adopt it more generally.

4 The differential clause-size hypothesis

In particular, I propose the following:

(15) **The differential clause-size hypothesis (DCSH)**

The degree of dependency of an embedded clause on the matrix clause is determined entirely on the basis of the embedded clause's size.

This has a natural interpretation within the cartographic approach, in terms of the presence (or activation) of particular heads in the upper regions of the clausal functional sequence (see especially Rizzi 1997, Cinque 2006).

- This is based on the idea that the functional sequence is universal, stating ordering relationships between the heads that form the backbone of the clause.
- Clauses may be truncated at a given point, with all higher functional heads missing, but if a head is present, all lower heads in the sequence must be present as well.¹

To be a bit more specific:

- Prototypically finite clauses will be relatively large, including functional heads setting up relative independence of temporal interpretation and subject reference.
- Prototypically non-finite clauses will be relatively small, lacking those heads, and thus be dependent on the matrix clause for supplying the relevant information.

The DCSH gives us a principled way to model the fact discussed above that there is a scale of dependencies rather than a two-way distinction:

- ☞ It predicts that the number of distinct degrees of dependence (or finiteness) is determined by the number of possible clause sizes and vice versa.
- ☞ This means, e.g., that we can make empirical arguments for the number of functional heads present in a given region – something that can be useful to constrain the proliferation of functional heads in cartographic approaches.
- ☞ And we make the further prediction that there is a single ordering of all clause types in terms of their size and thus of their dependency profile.

This is a strong prediction that is by no means obviously correct.

- Again, we can clearly identify two distinct dimensions for clausal dependency – the reference of the subject and the temporal interpretation of the clause.

¹It seems that certain heads must fall outside of this and be truly optional, sometimes also being able to appear in multiple positions in the hierarchy, e.g. Neg, Top and perhaps some elements relevant for question formation. These seem to be orthogonal to clausal dependency as discussed here.

- We know that these two dimensions tend to pattern together in specific clause types, but it is not always assumed that this correlation is very tight.
- The DCSH, however, predicts clear and exceptionless implicational relationships between particular levels on the two dimensions.
- Since the functional heads responsible for subject reference and temporal interpretation need not be the same, we don't expect the two to be in lock-step, but the presence of a given temporal head implies the presence of all referential heads lower in the hierarchy and vice versa.
- Note that such implications arise naturally if the relevant categories form a universal functional sequence, but would not arise in unordered feature bundles.

Regardless of whether the DCSH turn out to be supported, it can serve methodologically as a productive basis for careful empirical work.

- ☞ For this reason alone it is worth adopting as a working hypothesis.
- ☞ If it holds up, we have a powerful explanation of patterns of clausal dependency.
- ☞ And if it fails, the way in which it does so should provide valuable clues about what sort of weaker hypothesis we should retreat to.

5 Towards an implementation

The point of the DCSH is to handle clausal dependency properties in terms of the presence vs. absence of material from a universal functional sequence, rather than in terms of stipulated connections between features.

- ☞ We need a proof-of-concept to show that we can actually use clause size to capture the various kinds of dependency facts without sneaking in such stipulated connections.
- ⇒ So here I will suggest one way to do this, specifically for the degrees of referential dependence of the subject.

The first question to ask, from the perspective of the DCSH, is how the three levels of dependency identified by Sundaresan and McFadden (2009) are ordered relative to each other in terms of size.

- A crucial thing to understand is that thus far the levels are defined descriptively, so they may not necessarily map onto exactly three structures.
- In fact, there is reason to think that there are at least two distinct types of 'dependent' clause (i.e. the ones with the alternation):

1. One that is intermediate in size to the anaphoric and independent ones, which makes sense given that dependent clauses combine aspects of the other two
 2. Another that is smaller than both independent and anaphoric, which makes sense given Sundaresan and McFadden (2009)'s arguments that dependent clauses represent a default scenario
- The PRO/overt subject alternation comes about in rather different ways in these two clause types, so it's a bit misleading to label them both 'dependent'.
 - Instead, for reasons that will become clear, I'll call the former type **big dependent**, and the latter **unrestricted**, and I will refer to both together as **alternating**.

It is important in all of this that we rid ourselves of any residue of traditional Case-theoretic thinking about the distribution of PRO (McFadden 2004, Landau 2006, Sundaresan and McFadden 2009).

- ☞ There's 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 need something above the structure of control infinitives in order to Case-license the overt subject.

So let's start with the idea that the most basic structure should be an alternating one.²

- ☞ Anaphoric and independent clause types (and big dependent ones) are then built on top of this by the addition of functional heads which are responsible for the restrictions on the subject that are characteristic of those clauses.

There is some independent evidence for this, e.g. from various types of heavily reduced clauses, which are quite commonly alternating, e.g.:³

- (16) a. Ich ließ Jörg/EC mehr Wein einschenken.
 I let Jörg/EC more wine pour
 'I had Jörg pour more wine./I had more wine poured.'
 b. Me/PRO eat cheese curls? Never!

²There might be an even smaller structure under Wurmbrand (2001)'s analysis of certain kinds of control clauses as being simply VP without *v*P, i.e. not even projecting a position for agentive subjects. Such clauses might look anaphoric, since they will never allow disjoint agentive subjects, but they should allow overt 'subjects' of unaccusatives. This may be what is going on with the Bangla perfective clauses discussed by Biswas (to appear), which do not allow disjoint subjects unless the predicate is non-volitional.

³ECM and raising infinitives fit here as well, though it's less obvious that they are alternating. The crucial point is that what matters is not the distribution of PRO alone, but of [-R] DPs, including anaphors. ECM clauses allow both [+R] R-expressions and [-R] anaphors as subjects. Raising (and passivized ECM) infinitives allow the trace of either a [+R] or [-R] subject, depending on the matrix predicate:

- i. Bill_i believes himself_i/Geordie_j to be a genius.
- ii. Bill_i hopes PRO_i to seem <PRO> to be smart.
- iii. Bill seems <Bill> to be smart.

Simple evidence that these clauses are structurally reduced is that control infinitives in English allow aspectual *have*, while many of the structurally reduced clause types don't:

- (17) a. I'll try [PRO to have finished by tomorrow].
 b. *I saw him have eaten a sandwich.
 c. *Me have eaten cheese curls? Never!

This leaves the relative size of the anaphoric and independent clause types.

- We have grounds to expect independent clauses to be larger, since they typically allow material which is disallowed in anaphoric clauses.
- This includes independent tense specifications (18), overt complementizers (19) and fronted elements in the left periphery (20):⁴

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

The big dependent clauses would then have a size intermediate to these two.

6 Possible structures

How can we make sense of this in terms of independent clauses **containing** the structure that makes up anaphoric clauses? Put in quite simple terms, imagine the following possible proposal about the structure of three of the clause types (we'll come back to the big dependent clauses):⁵

- (21) a. **Unrestricted** [TP [*v*P [VP]]]
 b. **Anaphoric** [C_{Ana} P [TP [*v*P [VP]]]]
 c. **Independent** [C_{Con} P [C_{Ana} P [TP [*v*P [VP]]]]]

This is clearly the sort of thing we would like to propose under the DCSH, but it's not easy to see how to derive the defining properties of the clause types from it.

☞ I follow Landau (2004), Sundaresan and McFadden (2009) in assuming that PRO (like overt anaphors), is [-R], while other DPs are [+R].

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

⁵In fact, at least some of the unrestricted clauses are likely to be just *v*Ps. The label C_{Con} was chosen to suggest context. We'll see why directly.

- ☞ The obvious approach then, whereby C_{Ana} directly requires a $[-R]$ subject and C_{Con} requires a $[+R]$ subject, doesn't work.
- ☞ C_{Ana} will still be present below C_{Con} in independent clauses, and it is always going to be closer to the subject in Spec- vP or Spec-TP than C_{Con} is, so it should always get first shot at controlling the properties of the subject.
- ☞ If it forces the local DP in its c-command domain to be $[-R]$, it's not clear how a higher C_{Con} head could undo this. We thus need to take a more subtle tack.

Let us 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. Here's one simple idea:

- A $[+R]$ DP must have its person features interpreted relative to a context.
 - 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 in the relevant context, so as to exclude them both as possible referents.
- A $[-R]$ DP must be interpreted relative to another DP, as co-referent with it.
 - This boils down to something like Principle A of the classic binding theory: an anaphor must be bound.

Can we get something out of these interpretive requirements?

- ☞ The relationship between a $[-R]$ DP and its antecedent is standardly treated syntactically, hence subject to restrictions like locality, minimality and c-command.
- ☞ Much recent work has argued that the relationships between (the person features on) DPs and the context is also syntactic, and that the context is structurally represented (Bianchi 2003, Sigurðsson 2004, Baker 2008, Giorgi 2010, Sundaresan 2012).
- ☞ I suggest that if we implement this in a fairly simple way in the left periphery, we can get the requirement for $[+R]$ or $[-R]$ subjects in different clauses to fall out of their referential requirements interacting with the presence or absence of the relevant functional heads, subject to standard minimality and (phase) locality.

Take again the structure in 22 repeated from 21c:

(22) $[C_{Con}P [C_{Ana}P [TP [vP [VP]]]]]$

Now we make the following assumptions:

- C_{Con} hosts contextual information. Every $[+R]$ DP must be interpreted relative to such a head, hence must be in the same phase as C_{Con} .

- Every $[-R]$ DP must be bound by a local, c-commanding antecedent. The C_{Ana} head behaves like an abstract DP that can mediate anaphoric relationships in essentially successive-cyclic fashion, allowing the equivalent of long-distance binding.
- The highest C head present in a given clause defines a phase, while any lower ones do not. So C_{Con} will define a phase when present, otherwise C_{Ana} will.

This will get most of the relevant basic patterns to come out right:

Unrestricted clauses contain neither kind of C head, thus provide neither a context for the interpretation of a $[+R]$ subject, nor an abstract DP to bind a $[-R]$ subject.

- ☞ Crucially, though, they also do not contain a phase boundary, thus their highest DP can be interpreted relative to material in the matrix.
- ☞ I.e. it can be bound by a DP or interpreted relative to the context represented in the matrix C_{Con} , and thus is free to be either $[+R]$ or $[-R]$.

Anaphoric clauses have a C_{Ana} head, but no C_{Con} head.

- ☞ A $[+R]$ subject will not be able to be properly interpreted: there is no local representation of the context, yet the clause still constitutes a phase due to the presence of C_{Ana} , so the matrix C_{Con} is too far away.
- ☞ The presence of a phase boundary also means that a $[-R]$ subject cannot be bound directly by a DP in the matrix clause, but the C_{Ana} head, being at the edge, can mediate such binding successive-cyclically.
- ☞ The subject of an anaphoric clause can thus only be $[-R]$.

Independent clauses have both C_{Con} and C_{Ana} , thus also constitute phases, blocking any direct relationship between the embedded subject and anything in the matrix.

- ☞ Due to the presence of C_{Con} , however, a $[+R]$ DP can be interpreted directly relative to the local context.
- ☞ There is also a C_{Ana} head present, but given the presence of the C_{Con} head, C_{Ana} is no longer at the phase edge, thus cannot mediate binding, and the interpretation of an embedded $[-R]$ subject is ultimately unsuccessful.
- ☞ Thus the subject of an independent clause can only be $[+R]$.

Of course, an issue will arise under this story for object DPs, not just in embedded clauses but generally:

- ☞ If vP constitutes a phase, then how will a $[+R]$ direct object get into a phase-local relationship with the right head in the left periphery to be successfully interpreted?

- ☞ The simplest way to deal with this is to posit additional heads in the vP layer which can do the same work as C_{Con} and C_{Ana} do in the left periphery.
- ☞ This represents a clear complication, but has some independent support, which I will however set aside for reasons of time.⁶

Let us turn then to the idea that there is a class of big dependent clauses, which are intermediate in size to the anaphoric and independent clauses.

- This holds promise for a wide array of clauses that are clearly alternating, but don't seem to be as heavily reduced as the unrestricted bare-infinitival, 'mad magazine' and even ECM/Raising clauses.
- Included here are many of the 'want'-class complements and adjunct infinitives in languages like English and Tamil examined in Sundaesan and McFadden (2009).
- Consider e.g. that unlike the anaphoric 'try'-class complements, their temporal reference can be independent of that in the matrix clause:

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

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.

- As things stand, adding C_{Con} above C_{Ana} 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).
- What we need to do is split these two properties up over two heads, so that big dependent clauses have only the one that represents the context (we'll continue to call it C_{Con}), while independent ones also have the one that creates a phase boundary (we'll call it C_{Loc} to suggest locality).

There are a few ways to make this work technically, with none obviously superior.

- ☞ We could set things up so that the highest C head defines the phase, but the next head down is always able to get to the phase edge, perhaps by head movement.
- ☞ But all lower heads would still be trapped in the phase and thus unable to participate in successive-cyclic operations.

This would leave us with the following structures for the four clause types:

⁶For one thing, something along such lines seems to be necessary to deal with local binding in languages like Tamil (Sundaesan 2012). For another, it provides a way to deal with inherent reflexive verbs like English *behave*.

- (24) a. **Unrestricted**
 [TP [*v*P [VP]]]
 b. **Anaphoric**
 [C_{Ana}P [TP [*v*P [VP]]]]
 c. **Big Dependent**
 [C_{Con}P [C_{Ana}P [TP [*v*P [VP]]]]]
 d. **Independent**
 [C_{Loc}P [C_{Con}P [C_{Ana}P [TP [*v*P [VP]]]]]]]

In principle, then, it is possible to handle different levels of clausal dependency in terms of differential clause sizes.

- The discussion here has centered around the distribution of subject types, but if the DCSH is to be taken seriously, it should be possible to use or build on 24 to deal with temporal and other dependencies.
- It should also be applicable and extendable to a wider array of languages.

In the remainder of this talk, I will return to the puzzle from Bangla we started with, presenting some additional data and seeing how we can use them to test out the DCSH.

7 Complements of ‘want’ and ‘try’ cross-linguistically

One potential advantage of the DCSH is that it allows for a straightforward implementation of clausal selection for dependency:

- Rather than having to specify that a particular predicate selects a clause with some specific set of dependency properties, we can say that it c-selects for a category, i.e. a particular size of clause.
- This of course raises some interesting questions when it comes to flexibility of selection and the potential semantic basis for observed selection patterns.

There are two important points we can note about the semantics of a predicate and the clause type it selects:

1. While a language may have hundreds of clause-embedding predicates, all with slightly different meanings, the number of distinct embedded clause types will be much smaller. Selection is thus not sensitive to **all** aspects of the meaning of the predicate.
2. Nonetheless, there are clear relationships and cross-linguistically recurring patterns. As noted above, English and Tamil show a very similar distinction in the complements of ‘try’ and ‘want’, and Sundaesan and McFadden (2009) show that this extends also to other languages like Malayalam and Sinhala.

Things get interesting when we look a bit further afield, however.

- It's the apparent mismatches we find in cross-linguistic behavior that we're going to have to worry about.
- If we're lucky, they'll tell us something important about the mechanisms underlying clausal dependencies.
- If we adopt the DCSH, we expect the mismatches to be restricted and circumscribed in a particular way.
- This provides an impetus to do careful work on the interaction of different dependency properties in a range of languages.

Let's start with Tamil:

- The verb *veṇḍ-* 'want' can take an infinitival complement, which can either have an OC PRO subject, or an overt, disjoint one (reformatted from Sundaresan and McFadden 2009):

- (25) a. Champa-vūkkü_i [PRO_i orū samosa-væ sa:ppiḍ-æ] veṇḍ-um.
 Champa-DAT PRO a samosa-ACC eat-INF want-N.3SG
 'Champa wants to eat a samosa.'
- b. Champa-vūkkü [Sudha orū samosa-væ sa:ppiḍ-æ] veṇḍ-um.
 Champa-DAT Sudha.NOM a samosa-ACC eat-INF want-N.3SG
 'Champa wants Sudha to eat a samosa.'

- Such a complement clause can also take a modifier showing distinct temporal reference from the matrix (reformatted from Sundaresan to appear):

- (26) Ne:ttikki Raman_i-ukku [PRO_{i,*j} na:|eikki tu:ṅg-æ] ve:ṇḍ-um.
 yesterday Raman-DAT PRO tomorrow sleep-INF want-PST-3MSG
 'Yesterday Raman_i wanted [_{CP} PRO_{i,*j} to sleep tomorrow].'

- On both points, the complement of *pa:r-* 'try' goes the other way (from Sundaresan and McFadden 2009 and Sundaresan to appear, respectively):

- (27) Raman_i [PRO_{i,*j} /*Anand sa:datt-æ sa:ppiḍæ pa:-tt-a:n]
 Raman PRO_{i,*j} /*Anand rice-ACC eat-INF try-PST-3MSG
 'Raman tried (*Anand) to eat rice.'
- (28) Ne:ttikki Raman_i [PRO_{i,*j} (*na:|eikki tu:ṅg-æ) pa:-tt-a:n]
 yesterday Raman[NOM] PRO (*tomorrow) sleep-INF try-PST-3MSG
 'Yesterday Raman_i tried [PRO_{i,*j} to sleep (*tomorrow)].'

Now, there are a number of languages that do not show the same kind of distinction, with the complement of verbs like 'want' being big dependent.

- ☞ In German, e.g., verbs with meanings like ‘want’ are no more able to have overt disjoint subjects in their non-finite complement clauses than verbs with meanings like ‘try’ are.
- ☞ However, this is more a fact about the surface morphosyntactic realization of German embedded clause types than anything about particular clause-embedding predicates.
- ☞ In particular, German *zu*-infinitives never allow an overt subject, but must instead be replaced by a finite clause if the embedded subject is to have disjoint reference:

(29) Ich_i hoffe, [PRO_i den Aufsatz zu veröffentlichen].
 I hope the paper to publish
 ‘I hope to publish the paper.’

(30) * Ich hoffe, [den/der Aufsatz veröffentlicht zu werden].
 I hope the paper published to be
 Intended: ‘I hope for the paper to be published.’

(31) Ich hoffe, [dass der Aufsatz veröffentlicht wird]
 I hope that the paper published is
 ‘I hope that the paper will be published.’

It is a very interesting question why it is that English and Tamil have alternating structures that are realized morphosyntactically with infinitival verbs, while German doesn’t.

- ☞ But it is clear that clause types must be defined primarily in terms of their syntactic behavior, not in terms of their morphosyntactic realization.
- ☞ It is only in this way that we can e.g. properly distinguish the different types of *to*-infinitives in English.
- ☞ Furthermore, there is good evidence that morphosyntactic marking of clause types can change significantly while their underlying syntactic behavior remains the same.

Consider e.g. the development of the use of *for* in English infinitives:

- In the modern language, *for* is often required before an overt subject and is forbidden when there is no such overt subject:

(32) It would please me (*for) PRO to win the prize.

(33) It would please me *(for) Erin to win the prize.

- But in Middle and Early Modern English (and some modern dialects, see Henry 1992), *for* is typically found when there is **no** overt subject:⁷

⁷The Middle English examples are from the *PPCME2* (Kroch and Taylor 1999) and include the standard ID tag from that corpus.

(34) Gabriel the angel cam [**for** to speke with him] (CMMANDEV,90.2259)

- Perhaps more surprisingly, in the time of Chaucer, overt subjects are found without *for* in infinitival clauses that cannot possibly be analyzed as ECM:

(35) The thridde grevance is **a man to have** harm in his body. (CMCTPARS,310.C1.941)
 ‘The third grievance is for a man to have harm in his body.’

- We even get the two co-occurring (precisely opposite to our modern English-based expectations):

(36) The morwe tyde is moost covenable **a man to seye** his preyeres, and **for to thynken** on God, and **for to honoure** God, and to yeven almesse to the povre that first cometh in the name of Crist. (CMCTPARS,312.C1.1014)

‘The morning is most suitable for a man to say his prayers and to think about God and to honor God and to give alms to the poor, who come first in the name of Christ.’

Returning to the Bangla facts from the beginning of the talk then, could it be that the impossibility of overt subjects in the complement of ‘want’ is similarly surfacey?

- Recall that the non-finite complement of *ca-y* ‘wants’ can only have a PRO subject:

(37) Rik_i [PRO_{i,*j}/*Meri jitte] ca-y.
 Rick PRO_{i,*j}/Mary win-IPL want-PRS3
 ‘Rick wants (*for Mary) to win.’

- We could imagine that, like the German *zu*-infinitive, this morphological type in Bangla simply never realizes anything but an anaphoric structure.
- But this is not the case. Bangla does allow overt subjects in non-finite clauses built on the ‘imperfective participle’ in the right contexts, e.g. temporal adjuncts:

(38) Rik_i [Sudha/EC_{i,*j} oSudh khe-te] Santi pe-l-o
 Rick Sudha/ec medicine eat-IPL peace get-PST-3
 ‘Rick was relieved after Sudha took the medicine.’
 ‘Rick_i was relieved after he_i took the medicine.’

So what do we make of this?

- ☞ One obvious possibility would be to say that the Bangla word meaning ‘want’ happens to take the same kind of complement as the English and Tamil words meaning ‘try’.

- ☞ As it turns out, there is evidence against this, suggesting that the relevant complement type is somewhere in between those taken by English *try* and *want*.

Bangla also has a verb with a meaning like ‘try’, which initially looks the same as ‘want’ in taking an obligatorily controlled complement (Biswas to appear, formatting mine):

- (39) Rik_i [PRO_{i,*j} / *Sudha oSudh khe-te] ceSTa kor-l-o
 Rick PRO_{i,*j} / *Sudha medicine eat-IPL try do-PST-3
 ‘Rick tried (*for Sudha) to take medicine.’

However, the complements of ‘try’ and ‘want’ diverge again on other diagnostics:

- Partial control is bad with ‘try’, but good with ‘want’:

- (40) *SObhaddhokkho [PRO chhO-Ta-y SOMobeto ho-te] ceSTa kor-ech-il-en
 chair 6-CLF-LOC gather be-IPL try do-PFV-PST-3.H
 ‘*The chair tried to gather at six.’
- (41) SObhaddhokkho [PRO chhO-Ta-y SOMobeto ho-te] cey-ech-il-en
 chair 6-CLF-LOC gather be-IPL want-PFV-PST-3.H
 ‘The chair wanted to gather at six.’

- And independent temporal modification is bad with ‘try’, but good with ‘want’:

- (42) *gOtokal, Rima [PRO agamikal je-te] cesTa kOr-ech-il-o
 yesterday Rima tomorrow go-IPL try do-PFV-PST-3
 ‘*Yesterday, Rima tried to leave tomorrow.’
- (43) gOtokal, Rima [PRO agamikal je-te] cey-ech-il-o
 yesterday Rima tomorrow go-IPL want-PFV-PST-3
 ‘Yesterday, Rima wanted to leave tomorrow.’

Here’s what this shows:

- In Bangla just as in English and Tamil, there is a clear difference in behavior between the complements of verbs meaning ‘try’ and of verbs meaning ‘want’.
- For the most part, the behavior of the Bangla ‘want’ class parallels that in the other languages.
- But on the point of subject distribution, Bangla ‘want’ class verbs surprisingly pattern together with the ‘try’ class verbs.

This has an important implication for the DCSH, and in particular for the relationship between referential dependency and temporal interpretation:

- ☞ We already knew that we get referential anaphoricity and temporal anaphoricity together (English/Tamil/Bangla ‘try’-class complements) and referential alternation and temporal independence together (English/Tamil ‘want’-class complements).

- ☞ Now we have a clause-type with temporal independence, but referential anaphoricity. We can handle this mismatch under the DCSH, as long as the head responsible for temporal independence (call it $Temp_{Ind}$) is below the C_{Con} head that distinguishes big dependent clauses from anaphoric ones, i.e.:

$$(44) \quad \dots C_{Loc} > C_{Con} > Temp_{Ind} > C_{Ana} \dots$$

- ☞ This predicts that we should **not** find the mismatch in the opposite direction. I.e. there should be no clause types that allow flexibility of subject reference but no temporal independence, because the presence of C_{Con} should imply the presence of $Temp_{Ind}$.

One language in which we can test this prediction is Telugu (Dravidian), which has yet another pattern:

- Here, the verb meaning ‘try’ allows overt, disjoint subjects, as in 46 (Kissock to appear):

(45) [EC annam tinaɖam] Sridhar prajatnintʃa:ɖu
 EC food-ACC eat-INF-DAT Sridhar-NOM try-PST-3MSG
 ‘Sridhar tried to eat (the) food.’

(46) Pallavi_i [Sridhar a:me:_i dress ve:sukovaɖam]
 Pallavi-NOM Sridhar-NOM her-GEN dress-ACC put-on-INF
 prajatnintʃindi
 try-PST-3FSG
 ‘Pallavi tried for Sridhar to put on her dress.’

- This is at first glance quite surprising given the apparent meaning of the verb. But note that distinct temporal modification is also possible (Sundaesan to appear):

(47) Ne:nu_i [_{CP} EC_{i,*}]/Sridhar pootʃi reepu gelava-ɖa:n-iki ninna
 I_i.NOM EC_{i,*} /Sridhar race.ACC tomorrow win-INF.DAT-DAT] yesterday
 prajatninč-aa-nu.
 try-PST-1SG
 Lit: ‘I_i tried yesterday [_{CP} EC_{i,*}]/Sridhar to win the race tomorrow]’

- In other words, the complement of Telugu *prajatnintʃ*- behaves like a ‘want’ class complement in English and Tamil.

Telugu does seem to have a clause type that looks a bit more like the English and Tamil ‘try’ class complements, as Sundaesan (to appear) shows.

- This is found e.g. in the complement of *modalupetʃtu* ‘begin’. Unlike with *prajatnintʃ*, independent temporal modification is impossible (49):

- (48) Ne:nu_i [EC_{i,*j} po:ti: gelav-aɖam] modalupet[tee-nu.
I[NOM.SG] EC race[ACC.SG] win-INF begin-PST-1SG
'I began [_{CP} EC_{i,*j} to win the race].'
- (49) *Ne:nu_i [EC_{i,*j} pooti: reepu gelava-ɖam] ninna
I[NOM] EC race[ACC.SG] tomorrow win-INF-DAT] yesterday
modalupet[tee-nu.
begin-PST-1SG
Lit: '*I began yesterday [EC_{i,*j} to win the race tomorrow].'

- As the DCSH predicts, this clause type can only have OC PRO as its subject:⁸

- (50) *Ne:nu_i [Sridhar_j po:ti: gelav-aɖam] modalupet[tee-nu.
I[NOM.SG] Sridhar race[ACC.SG] win-INF begin-PST-1SG
Lit: '*I_i began [_{CP} Sridhar_j to win the race].'

- Quirky case facts show incidentally that, while a raising(-like) structure is available here (51), a control one is as well (modalu-control):

- (51) Sridhar_i-ki [_{TP} <Sridhar_i-ki> bhayam unɖadam] modalupet[ee-in-di.
Sridhar_i-DAT fear.NOM having begin-PST-3NSG
'Sridhar started being afraid.'
- (52) Sridhar_i [_{CP} EC_{i,*j} bhayam unɖadam] modalupet[ee-ɖu.
Sridhar.NOM EC_{i,*j} fear.NOM having begin-PST-3MSG
'Sridhar_i started being afraid.]'

All of this raises difficult questions regarding how exactly the meaning of a predicate determines the properties of the clauses it embeds:

- The inconsistent behavior of verbs meaning 'want' and 'try' across languages would seem to undermine any strong connection.
- Note, however, that translation of these meaning types is notoriously difficult, and very small meaning differences can have big syntactic consequences.
- Suggestive evidence that Bangla *cey* isn't really the same as English *want* comes from the fact that it is also used in the meaning 'ask' in certain tenses (Gillian Ramchand, p.c.)
- Considerably more work on the lexical semantics of these predicates is needed to isolate the pieces of their meanings that are relevant for determining their embedding behavior.

⁸The subject can be overt, but only if contrastively focussed, and even then is interpreted like OC PRO.

Of course, the discussion in this section has been preliminary, but my goal has been to demonstrate the kinds of predictions that the DCSH can make and how they can be tested.

- ☞ For the time being, the DCSH is safe, but that's not really the main point here, especially given the rather small sample of languages considered.
- ☞ What's more important is the way that this hypothesis makes us think carefully about relationships between different dependency properties within a single clause type, and the patterns of such relationships across clause types and languages.
- ☞ Exploring those patterns to push and test the DCSH should serve as an impetus for careful empirical work that will give us valuable results regardless of how well the DCSH itself holds up under scrutiny.

References

- Adger, David. 2007. Three domains of finiteness: a minimalist perspective. In *Finiteness: theoretical and empirical foundations*, ed. Irina Nikolaeva, 23–58. Oxford: Oxford University Press.
- Baker, Mark. 2008. *The syntax of agreement and concord*. Cambridge: Cambridge University Press.
- Bianchi, Valentina. 2003. On finiteness as logophoric anchoring. In *Temps et point de vue/tense and point of view*, ed. Jacqueline Guéron and Liliane Tasmovski, 213–246. Université Paris X Nanterre.
- Biswas, Priyanka. to appear. The role of tense and agreement in the licensing of subjects: Evidence from participial clauses in Bangla. *Natural Language and Linguistic Theory*.
- Chomsky, Noam, and Howard Lasnik. 1993. The theory of principles and parameters. In *Syntax: An international handbook of contemporary research*, ed. Joachim Jacobs et al. Berlin: Walter de Gruyter.
- Cinque, Guglielmo. 2006. *Restructuring and functional heads*. The Cartography of Syntactic Structures, volume 4. Oxford: Oxford University Press.
- Giorgi, Alessandra. 2010. *About the speaker: Towards a syntax of indexicality*. Oxford: Oxford University Press.
- Henry, Alison. 1992. Infinitives in a *for-to* dialect. *Natural Language and Linguistic Theory* 10:279–301.
- Kissock, Madelyn. to appear. Evidence for 'finiteness' in Telugu. *Natural Language and Linguistic Theory*.
- Kroch, Anthony, and Ann Taylor. 1999. Penn-Helsinki parsed corpus of Middle English, 2nd ed. Univ. of Pennsylvania.
- Landau, Idan. 2004. The scale of finiteness and the calculus of control. *Natural Language and Linguistic Theory* 22:811–777.
- Landau, Idan. 2006. Severing the distribution of PRO from Case. *Syntax* 9:32–66.

- Martin, Roger. 2001. Null case and the distribution of PRO. *Linguistic Inquiry* 32:141–166.
- McFadden, Thomas. 2004. The position of morphological case in the derivation: a study on the syntax-morphology interface. Doctoral Dissertation, University of Pennsylvania, Philadelphia.
- Pires, Acriso. 2007. The derivation of clausal gerunds. *Syntax* 10:165–203.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar*, ed. Liliane Haegeman, 281–337. Dordrecht: Kluwer Academic Publishers.
- Sigurðsson, Halldór Ármann. 2004. The syntax of person, tense and speech features. *Rivista di Linguistica* 16:219–251.
- Sundaesan, Sandhya. 2012. Context and (co)reference in the syntax and its interfaces. Doctoral Dissertation, University of Tromsø (CASTL)/Universität Stuttgart.
- Sundaesan, Sandhya. to appear. Making sense of silence: Distinguishing between “PRO” and “pro”: Commentary on “Evidence for ‘finiteness’ in Telugu” by Madelyn J. Kisson. *Natural Language and Linguistic Theory*.
- Sundaesan, Sandhya, and Thomas McFadden. 2009. Subject distribution in Tamil and other languages: Selection vs. Case. *Journal of South Asian Linguistics* 2:5–34.
- Szabolcsi, Anna. 2009. Overt nominative subjects in infinitival complements cross-linguistically: Data, diagnostics, and preliminary analyses. In *Papers in syntax*, volume 2. NYU Working Papers in linguistics.
- Wurmbrand, Susanne. 2001. *Infinitives: restructuring and clause structure*. Berlin: Mouton de Gruyter.