

The maximal size of infinitives: a truncation theory of finiteness*

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This paper argues for the following finiteness universal: an infinitive cannot co-occur with a high complementizer (such as *that* in English). Although such an observation may seem trivial, assuming Rizzi (1997)'s articulated CP allows us to make important generalizations on the nature of infinitives. This paper combines Pesetsky (2021)'s arguments that finiteness is a matter of clause size together with truncation theories of infinitives such as Shlonsky and Soare (2011)'s to argue for a novel understanding of finiteness, proposing precise and falsifiable definitions for finite and nonfinite clauses. Based on a crosslinguistic survey of several different languages belonging to many different language families, I present a theory of finiteness under which a clause is defined as nonfinite iff its ForceP/CP2 layer has been truncated, and finite iff it is untruncated. Beyond arguing for this finiteness universal, this paper also discusses the maximal size of infinitives in these languages, and cartographic predictions that result from it. Under this definition of finiteness in terms of the truncation of the C domain, I will argue that the surprising phenomenon of finite control, defended by Landau (2004), does not exist. Although derivational theories of finiteness explain this generalization, infinitives come in at least five different sizes crosslinguistically.

Keywords: finiteness, complementizer, infinitive, clause size, left periphery

1 Introduction

One of the most poorly understood notions in generative grammar is the notion of finiteness. For descriptive grammarians, this is relatively simple: finiteness is seen as a property of the verb. As Nikolaeva (2007) points out, in Latin, the finite/nonfinite distinction was originally just the presence or absence of agreement of the verb, though other properties were later considered to be relevant for finiteness as well—the most important of which is tense.

This works straightforwardly to analyze finiteness within a European context, but such a definition of finiteness cannot be extended crosslinguistically. Landau (2013) lists a number of languages with inflected infinitives, such as Turkish, Brazilian Portuguese, Basque, Hungarian and Welsh which have nonfinite complements that are inflected for agreement. An example from European Portuguese is provided in (1) below from Raposo (1987):

- (1) Será difícil [eles aprovar-em á proposta].
It will.be.difficult they to.approve-3PL the proposal
'It will be difficult [for them to approve the proposal].'

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One, as Raposo (1987) does, may claim that agreement is not the relevant property for the finite/nonfinite distinction: instead, the distinguishing property is tense. But this does not work either. In Tamil, as McFadden and Sundaresan (2014) points out, we see the opposite scenario with a gerundival participle in (2) below, in which the embedded clause is embedded for tense, but lacks agreement, yet appears to be nonfinite given its inability to stand alone:

- (2) Raman_i [EC_i Seetha-vae naaleeki paar-pp-adaagae] so-nn-aan.
 Raman EC Seetha-ACC tomorrow see-FUT-GER-ACC say-PST-3MSG
 ‘Raman_i spoke of [EC_i seeing Seetha tomorrow].’

Another property that has been commonly assumed to distinguish finite clauses from nonfinite clauses is whether the clause licenses overt subjects, such as by Chomsky (1977a). For example, A-movement out of a finite clause is not possible, as in (3a), but it is from a nonfinite clause, as in (3b). Although in the past such a distinction was tied to Case and agreement, in more recent proposals such as by Pesetsky (2021) it is tied to clause size: (3a) involves a clause as large as CP, which precludes the possibility of subject extraction, whereas (3b) involves a clause that is smaller than CP, which allows the possibility of subject extraction:

- (3) a. *David_i seems [that t_i likes exfoliation].
 b. David_i seems [t_i to like exfoliation].

Ultimately, I will adopt a similar line of reasoning. Regardless, it seems *prima facie* possible that subject licensing is related to finiteness, especially in languages like Mandarin which have no inflectional morphology whatsoever, and hence, no tense and agreement. Such languages have remained puzzling for theories of finiteness for decades. As has been noted by many in the literature on Mandarin, clausal complements of verbs such as *like* cannot have an overt subject or a null pronoun that does not refer to the matrix subject. In other words, we observe a controlled PRO in the complements of such sentences, as in (4) from Ussery et al. (2016) below. This indicates there might be a finite/nonfinite distinction in Mandarin after all:

- (4) Xiaoming xihuan (*ta) chi shoushi.
 Xiaoming like he eat sushi
 ‘Xiaoming likes to eat sushi.’

McFadden and Sundaresan (2014) raises further challenges for this line of reasoning, however, based on evidence from languages such as Tamil, Sinhala, Modern Irish and Middle English which have clauses that are clearly nonfinite—that lack tense and agreement—yet allow subjects to be licensed, as in the Modern Irish example in (5) below.

- (5) Ghoillfeadh se orm [tu me a ionsai].
 would.bother it on.me you.ACC me INF attack
 ‘It would bother me for you to attack me.’

As Raposo (1987) points out, even inflected infinitives in European Portuguese allow overt pronominal subjects—which Raposo ties to agreement. Regardless, McFadden and Sundaresan undermine the correlation between subject licensing and finiteness, not just for simpler models of subject licensing via Agreement in the GB and Minimalist framework like Raposo (1987)’s, but also for Landau (2004) and Szabolcsi (2009), who assume a more complex relationship between tense, agreement and subject licensing in clauses.

Another potential distinguishing property, briefly alluded to above in our discussion of Tamil, is the ability of a clause to stand alone. But this is plainly contradicted by the existence of imperatives like *Catch him!* which, even in languages with very rich inflectional morphology, have little inflection, and yet can stand alone. Therefore, although I have simplified the empirical terrain somewhat, many works, such as Nikolaeva (2007), have concluded that there is no single morphosyntactic definition or single semantic function associated with finiteness.¹ As such, works like Wurmbrand et al. (2020) claim that different morphosyntactic categories are responsible for finiteness in different languages—such as agreement in the South Slavic languages.

My primary goal in this paper is simple: I will argue that this conclusion is incorrect. An investigation into the size of infinitives allows me to claim that there is a syntactic property that can distinguish all finite complements from all nonfinite complements, providing further evidence for Pesetsky (2021)'s claim that finiteness is a matter of clause size. In this paper, I will propose that there is in fact a specific clausal projection that is associated with all finite complements. In particular, I would like to bring the attention of the reader to a seemingly trivial fact: an infinitival clause can never co-occur with *that*, which is often referred to as a finite complementizer:

- (6) Caitlin seems (*that) to be pretty.

I will argue for the following generalization: this is true of all nonfinite clauses crosslinguistically. Such an observation, at this stage, is plainly circular: it is trivially true that a finite complementizer cannot head a nonfinite clause. But if we adopt works which split up the CP domain following Rizzi (1997), we can change our conception of what *that* actually is. And this will allow us to bypass this circularity and make a non-trivial crosslinguistic generalization.

Following Rizzi (1997), I split up the C domain in a manner which is schematized below. Further details will be provided in section 3 of this paper, but I will first note that I have eliminated Rizzi's labels of ForceP and FinP, and replaced them simply with CP2 and CP1. As we will see, this splitting-up is justified by the possibility of double complementizer constructions crosslinguistically, and the existence of complementizers which seem higher in the C domain, and ones which seem lower.

- (7) CP2 > IntP > FocP > TopP > WhP > CP1 > TP

A complementizer that heads CP2 is defined as a *high complementizer*. It precedes topics and focus-marked elements, among other things. I argue that high complementizers never appear with nonfinite clauses. A complementizer that heads CP1, on the other hand, is a *low complementizer*. It often appears with nonfinite clauses, but it need not. It follows topics and focus-marked elements, but only if the TopP and FocP layers have not already been truncated, which is almost always the case. Villa-Garcia (2012) provides an illustrative example from Spanish, where there are two complementizers *que*, and the topic precedes one but follows the other:

- (8) Susi dice **que** a los alumnos (**que**) les van a dar regalos
 Susi says that DAT the students that cl. go to give presents
 'Susi says that they are going to give the students presents.'

¹Many morphosyntactic categories have been suggested to be responsible for finiteness in the literature: mood, tense, aspect, person marking, illocutionary force, nominal morphology on the verb, and markings that mark dependent clauses in certain languages. Given that a full discussion of these properties would take us out of the scope of the paper, the reader is referred to Nikolaeva (2007) for further discussion.

It is in fact possible to distinguish between these complementizers even in English: I will uncontroversially claim that *that* is a high complementizer. *For* may be a low complementizer. Although many such tests will be presented throughout this paper, I will provide a simple illustrative example. For example, notice that, as Haegeman (2012) points out, topicalization is possible in the embedded clause complements of non-factives, and in this case *that* precedes the topic:

- (9) I said that Manufacturing Consent_i, Chomsky wrote t_i.

This indicates that *that* is a high complementizer in Rizzi's system. On the other hand, infinitives in English never allow topicalization or focalization. This indicates that English infinitives seem to be deeply truncated compared to English finite embedded clauses.

- (10) * Chomsky claimed Manufacturing Consent_i, to have written.

The lack of topicalization and focalization in infinitives is by no means a universal, although they appear to be rarely attested. For example, Hebrew infinitives seem to display almost the entire range of the properties of the C domain, allowing *why*-embedding, topicalization, focalization and more, according to Shlonsky (2014):

- (11) ani roce [et ugat ha pereg]_i lenasot t_i.
 I want DOM cake the poppyseed to.try
 'I want to try the poppyseed cake.'

And yet, Hebrew infinitives crucially cannot be headed by the high complementizer *še*:

- (12) ani roce (*še) lenasot et ugat ha tapuxim.
 I want (*that) to.try DOM cake the apples
 'I want to try the apple cake.'

More revealingly, there are languages—at least Icelandic, Mandarin, Serbian and Spanish—which have complementizers that behave as high complementizers in finite clauses in fact cannot behave as a high complementizer in nonfinite complements.

For example, what has been called the infinitival marker in Icelandic, *að*, appears only with control complements. But another element, *að*, behaves like *that*, appearing with finite embedded clauses. They have different properties: the former does not allow topicalization at all as seen in (13a), while the latter allows it, following *að*, as in (13b). To account for this phonetic identity, I will propose that *að* is the phonetic form when either CP2 or CP1 is filled in the clausal domain.

- (13) a. * Risarnir lofa [að [á morgun]_i éta ríkisstjórnina t_i].
 the-giants promise to to-morrow eat the-government
 'The giants promised to eat the government tomorrow.'
 b. Risarnir segja [að [á morgun]_i éti þeir ríkisstjórnina t_i].
 the-giants say that tomorrow eat they the-government
 'The giants said that they will eat the government tomorrow.' Thraínsson (1993)

Therefore, the main crosslinguistic generalization that I will argue in this paper, is in (14) below.²

²The scope of this paper is to cover only the clausal size of infinitives; as such, I will only focus only on infinitives. For the most part, I will not discuss gerunds or other kinds of nonfinite clauses in this paper, leaving it to future research. However, it is likely that conclusions that I make concerning infinitives can also be made concerning gerunds as well.

- (14) **The Maximal Infinitive Size Generalization:** No infinitive projects CP2.
No infinitive can co-occur with a high complementizer.

This allows for a definition of finiteness in terms of the truncation of the C domain, and hence clause size. This paper is an investigation on the clause size of infinitives more generally, beyond the generalization made in (14) above.

As such, I will also argue that the clause size Pesetsky (2021) proposes for infinitives misses many empirical generalizations concerning the size of infinitives, indicating that infinitives can be larger than what Pesetsky proposes. According to Pesetsky, there is a single size for all infinitives crosslinguistically; I show that there are at least five. I will also conclude that all control complements are truncated in the C domain at least to some degree, and hence, finite control does not actually exist, contra Landau (2004) and others. This paper presents and discusses data from several different languages belonging to many language families to make these generalizations.

This paper is structured as follows. Section 2 presents Pesetsky (2021)'s derivational theory of finiteness, dubbed Exfoliation, which posits a single size for all infinitives. Section 2 introduces the reader to Rizzi (1997)'s structure for the C domain. Section 4 shows that infinitive size can come in five different sizes crosslinguistically and I discuss the generalizations that result from it. Section 5 discusses the consequences of my theory of finiteness: consequences on Exfoliation, whether factives are truncated, and whether finite control exists. Section 6 concludes.

2 Exfoliation: towards a derivational theory of clause size

Given that I will argue that finiteness is a matter of clause size, this first background section is dedicated to introducing the reader to the recent derivational theory of finiteness in Pesetsky (2021). Although I depart from Pesetsky in some specific areas that I discuss in section 5, I am largely in agreement with his attempt. This section will provide the necessary background to understand the truncation theory of finiteness that I create and defend in this paper.

The idea that finiteness is a matter of clause size far outdates Pesetsky's work. Bouchard (1984), Koster (1984) and Hornstein and Lightfoot (1987) all argue that the extraction of an object correlates with the size of the embedded clause; more recently, Müller (2020) has proposed a similar theory to Pesetsky's. But the attempt by Pesetsky is the most well-developed. As he notes, there is a great variety of clause types found in the languages of the world. Here are some examples from English, in which the embedded clauses are italicized:

- (15) a. I think *that Caitlin mixed hot sauce into my salad.* *finite*
 b. I prefer *for Caitlin to put hot sauce in my salad.* *infinitive*
 c. I suggest *that Caitlin put hot sauce in my salad.* *subjunctive*
 d. I remember *Caitlin putting hot sauce in my salad.* *gerund*

At least in English, raising in English is only possible from infinitives:

- (16) a. Caitlin seems ~~Caitlin~~ to have solved the problem. *infinitive*
 b. *Caitlin seems that ~~Caitlin~~ has solved the problem. *finite*

The core questions that Exfoliation seeks to address are: why do nonfinite clauses exist in the first place, and why do the properties of the subject position in nonfinite clauses differ from their

finite counterparts? One central puzzle to consider arises with raising-to-object/ECM constructions: it has often been considered, since Vergnaud's letter to Chomsky and Lasnik, that the driving factor for raising-to-object constructions is Case assignment, and all nouns need Case.

Let us first discuss Case assignment. Vergnaud, more generally, notes that the distribution of nominals is restricted in a way that CPs/PPs are not:

- (17) We are sure [_{CP} that the world is round] vs. * [_{DP} the world's roundness].

Under Case-driven accounts of raising-to-object constructions, the subject of the nonfinite clause in (18a) is not able to get Case in its base-generated position, so it needs to move up, perhaps to Spec,VP of the matrix verb. There, it is assigned accusative Case. A similar line of reasoning drives the assigning of nominative Case to the matrix subject in raising-to-subject constructions in (18b). In (18c)-(18f), we see that elements which cannot assign Case lead to unacceptability:

- (18) a. Caitlin believes him_i [_{t_i} to be smart]. *raising-to-object*
 b. Caitlin_i seems [_{t_i} to be smart]. *raising-to-subject*
 c. * It seems Caitlin to have solved the problem. *unaccusative matrix verb*
 d. * It was believed Caitlin to speak Irish well. *passive matrix verb*
 e. * Caitlin is aware Madeline to be the cutest. *adjective*
 f. * Caitlin's belief it to have been raining. *noun*

But this makes a strikingly incorrect prediction. If elements that don't need Case, like CPs and other elements Pesetsky discusses, we would predict certain structures like the ones below to be grammatical. We obtain the same contrast regardless of their inability to be assigned Case:

- (19) a. Caitlin considers [that the world is round] to be a tragedy. *raising-to-object*
 b. [That the world is round] seems to be a tragedy. *raising-to-subject*
 c. * It seems [that the world is round] to be a tragedy. *unaccusative matrix verb*
 d. * It was believed [that the world is round] to be a tragedy. *passive matrix verb*
 e. * Caitlin is aware [that the world is round] to be a tragedy. *adjective*
 f. * Caitlin's belief [that the world is round] to have been raining. *noun*

The Case approach to this puzzle is on the wrong track. Under a derivational theory of clause size like Exfoliation, these ungrammatical examples do not follow from Case. Under Exfoliation, all clauses are born finite and are reduced in structure to nonfinite via a process of subject extraction. While raising-to-object and -subject constructions allow (18a) and (18b) because they involve subject extraction, (18c)-(18f) are ruled out because they involve illegal in finivization, or subject extraction: these constructions simply do not have a subject extraction probe.

Let us now get into the technical details of this account.³ Pesetsky makes a very strong claim: ultimately, all nonfinite clauses are created via a process of subject extraction, even control constructions which do not prima facie involve subject extraction, putting aside movement theories of control like Hornstein (1999)'s. All clauses are born as full and finite CPs. Infinitives are

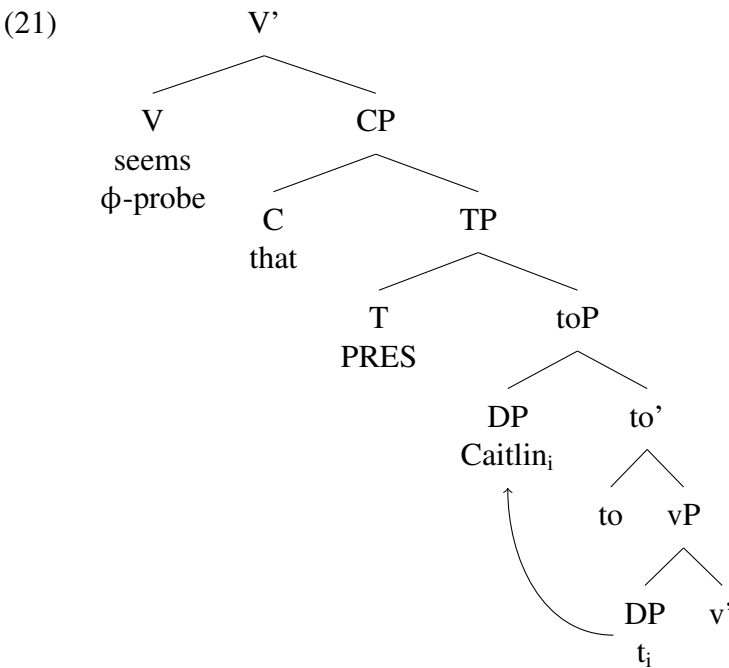
³Pesetsky provides further arguments for Exfoliation, including providing examples beyond the CPs that I have discussed and another argument from unraised nominatives in Icelandic. But for our purposes, this is sufficient, and the reader is referred to Pesetsky (2021) for further discussion.

made, not born, contra selectional accounts in which different predicates, like raising and control predicates, picked the size of their complement.

Under Exfoliation, subject extraction always drives the formation of an infinitive. More specifically, it is commonly accepted that both raising-to-subject and -object constructions involve movement of the embedded subject. This is precisely what drives the formation of the infinitive: a probe has to be able to locate its goal, even across a phase boundary. To get the desired results, some probing across phasal boundaries is required; this is defined as follows:

- (20) a. **Phase Penetrability:** A probe P with an EPP property can locate a goal G across a CP boundary even with G does not occupy the edge of that CP.
 b. **Phase Impenetrability:** But G can move to P only if it occupies the edge of its clause.

Let's see how a derivation of the sentence *Caitlin seems to be happy* would work. First, it is assumed that the embedded clause is born finite, so the embedded clause might look like *seems that Caitlin is happy* at a point in the derivation, as shown in the tree below. Further, all clauses are born with a toP, the relevance of which will be discussed shortly: it can only be pronounced post-Exfoliation. A crucial assumption in the tree below is that the embedded subject does not move to TP immediately; the EPP need not be satisfied immediately:

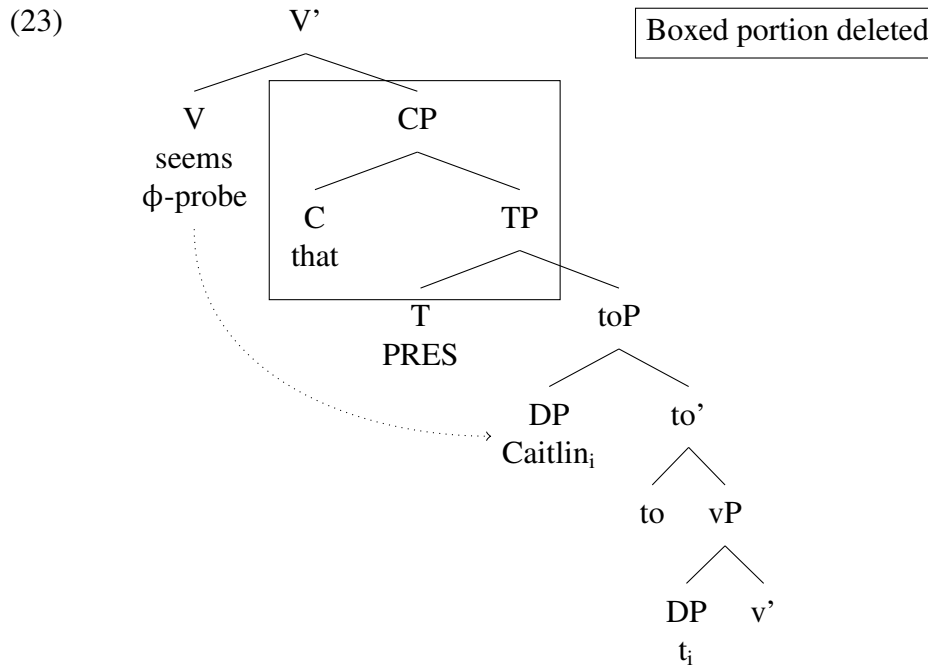


At this point, by Phase Impenetrability above, the embedded subject cannot be extracted because it is not at the edge of the clause. So, the operation Exfoliation comes into play, defined as follows, to ensure that the subject is at the edge:

- (22) **Exfoliation:**
 a. Structural Description: ... A ... [XP (phase) ... [YP (non-phasal) ... B ...]], where:
 i. XP is the phase that dominates B but not A,
 ii. B occupies the edge of YP, and

- iii. a movement triggering probe on A has located B as its goal.
- b. Structural Change: Replace XP with YP, which takes the phasal property of its predecessor.

Exfoliation removes structure to ensure that the embedded subject is now at the phase edge, and the probe on *V* may now extract the subject. Exfoliation removes the CP and TP layers:



The projection toP is present in all finite clauses, as well. Though it is present, to ensure that *to* is pronounced only with infinitives, Pesetsky adds a further condition—dubbed the Exposure Condition—on how certain elements can be pronounced if they head a phase:⁴

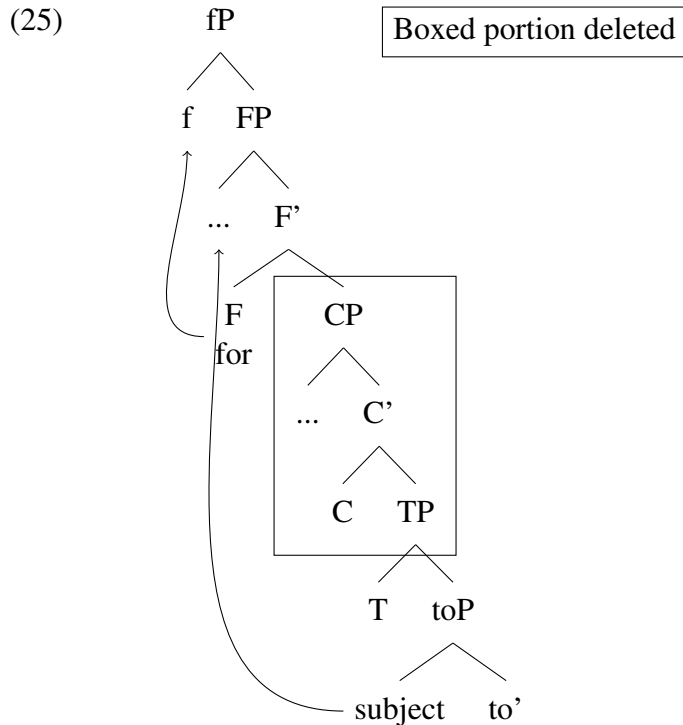
(24) **The Exposure Condition**

- a. A is *exposed* iff it heads a phase and does not retain a specifier. (In other words, if it is the highest element in its phase.)
- b. A functional head is overt iff it is exposed.

It's easy to see how derivation would apply to raising-to-subject and -object constructions. But under Exfoliation, sentences with *for*-infinitives like *Mary is eager for Caitlin to discuss the topic* involves subject extraction, as well. This seems *prima facie* counterintuitive given that *for* only occurs with infinitives to begin with: if infinitives are made and not born, how would *for* even come into play during a derivation? The answer is simple: *for*-infinitives have a similar syntax with raising-to-object constructions.

⁴The Exposure Condition cannot be used together with Wurmbrand and Lohninger (2019)'s arguments that infinitives come in three different sizes. Similar to what I will argue in this paper, for Wurmbrand and Lohninger (2019), infinitives can differ in clause size, but in three ways: CP > TP > vP. I concur with their observations, and I will add to this observation by showing that crosslinguistically, the maximal size of infinitives in a language can range between at least these five sizes: IntP > TopP > WhP > CP1 > TP. Satuk (2020) eliminates the Exposure Condition while getting Wurmbrand and Lohninger (2019)'s empirical observations.

I will now discuss what I find to be the most controversial notion in this framework: the notion of a *superstructure*. *For* is not a complementizer, but rather an irrealis element that takes a complementizer as its complement.⁵ This irrealis element is contained in a superstructure that Exfoliates and allows the embedded subject to raise to a position at which *for* can assign it with accusative Case. A simplified illustration of a derivation of a for-infinitive is provided below:



To get a structure for control infinitives, we have two options. First, we can either assume Hornstein (1999)'s movement theory of control, which would have a derivation identical to that of (23), involving subject extraction in a very natural way. But if we don't assume Hornstein's theory, the subject extraction is not obvious. In that case, the derivation of a control infinitive would require a superstructure and an invisible *for*, as in (25).⁶

Before concluding, let me point out the crucial point of divergence between the theory of finiteness that I present here and Exfoliation. In section 4, I will empirically show that there are at least five different sizes for infinitives crosslinguistically, rather than one. Pesetsky would have to assume that superstructures themselves have a left periphery, in the style of Rizzi (1997), and they can come in different sizes in different languages. This ultimately means that some selectional aspect is necessary: the entire clause size of the infinitive cannot be derived via Exfoliation.

As such, although I believe Pesetsky's arguments for a derivational theory of finiteness are solid, ultimately, this may mean that a purely derivational approach to finiteness will not work—languages can select the maximal size of their infinitives as I will show. But if infinitives cannot be as large as CP₂, as this paper argues, this can only be accounted for under a derivational

⁵The reader is referred to Pesetsky (2021) for empirical evidence for this claim, which I will not be presenting in this paper. Under my account, *for* is a low complementizer in English.

⁶Pesetsky assumes further conditions on the pronunciation of *for* and PRO that we need not get into. However, for Pesetsky, PRO is no different than *pro*. But this is at odds with Landau (2015) and Pearson (2015)'s conclusion, among others, that PRO is a bound minimal pronoun. I leave solving this confound open for future research.

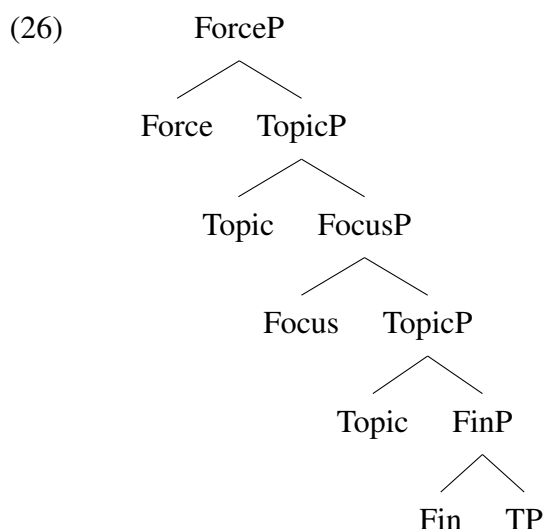
framework for finiteness. This empirical generalization is completely mysterious under non-derivational theories to infinitive clause size. We now move onto the C domain.

3 Splitting up the C domain

This section will lay the foundation for the theory of finiteness that I propose in this paper: namely that finiteness itself is a property of the C domain. I present Rizzi (1997)'s arguments in favor of splitting up the C domain into many (and potentially ordered, crosslinguistically) different functional projections. I provide evidence for there being high and low complementizers—two separate complementizers—in the C domain. I discuss existing accounts of the truncation of infinitives. At the end, I also provide my update to Rizzi's structure, changing the labels of Rizzi's ForceP and FinP. Rather than having FinP, the low complementizer head determine the finiteness of the clause, I argue that finiteness itself can be derived via truncation, assuming that finiteness is a matter of clause size, as suggested by the Exfoliation framework.

3.1 Rizzi (1997)'s split-CP structure

Rizzi (1997) provides arguments for splitting up the C domain as follows in (26). If we had just one C projection—CP, as is commonly assumed—it would be impossible for a single projection to be responsible for all of these properties that I will discuss in this section.⁷



Let us start with the heads Force and Fin: Rizzi (1997) argues that two complementizers in Italian, *che* and *di*, are realized by Force and Fin respectively. ForceP is the locus of the semantic

⁷This raises the interesting question of what exactly is a phase in this structure. This is at odds with Chomsky (2001) to some degree given that there are many potential phase candidates but it is not obvious which one is the phase head. At the very least, I assume that ForceP—the highest projection of the C domain—is a phase head. Given that wh-movement takes place to a position right above FinP, as I will argue later in this next section, and successive cyclic wh-movement, it might be assumed that FinP is a phase as well. But this is at odds with Carstens and Diercks (2009)'s observations of FinP never being phasal in Lubukusu. Regardless, apart from the phasehood of ForceP, it is out of the scope of this paper to determine what potential phase heads in this structure are.

force of the clause (such as an assertion, a question or an imperative). FinP, on the other hand, simply encodes whether the clause is finite or not. Under Rizzi's account but not mine, finiteness is to be understood as a very rudimentary specification of mood, tense and agreement in the IP domain. Fin itself does not have a semantics but it is endowed with certain features that allow this aforementioned specification to take place.

Topic and Focus, on the other hand, are projections with an independent semantics of their own, and their specifier position is for topicalized and focalized DPs respectively. There is a difference between focalization and topicalization: they can be teased apart by using different contexts. For our purposes, it is not necessarily to discuss this in too much detail, but let us follow Swart and de Hoop (2000) in assuming the following contrast: topic is on expected and uninformative (given) information, while focus is on unexpected (new) information. Focus may also be used contrastively—in fact, Rizzi reports that focus fronting is only available with contrastive focus in Italian. Rizzi contrasts between these two in Italian: while (27a) involves Clitic Left Dislocation (CLLD), (27b) involves focus fronting in a context with contrastive focus:

- (27) a. Il tuo libro, lo ho letto. b. Il tuo libro ho letto.
 the your book, it I have.read the your book I have.read
 ‘Your book, I have read it.’ ‘Your book I have read.’ (but not his)

Furthermore, TopicP in (26) is *recursive*, in that it can appear both before or after FocusP—or before or after other projections between ForceP and FinP; it is commonly assumed that there are. Rizzi provides evidence from this in Italian, which we need not go into; in this paper, I will assume for simplicity that FocusP is always ordered above TopicP.

3.2 High, low, double complementizers

This sets the stage to allow us to distinguish between *high* and *low* complementizers, which are realized by Force and Fin respectively. Rizzi was the first to note this contrast, which will be essential for the theory of finiteness in this paper. We see in (28) below that it is impossible to topicalize to a position to the left of the high complementizer *che* (which Rizzi calls a finite complementizer), but it is possible to topicalize to its right.

- (28) a. Credo che, il tuo libro, loro lo apprezzerebbero molto.
 I.think that[+fin] the your book them it will.appreciate much
 ‘I think that they will appreciate your book very much.’
 b. *Credo, il tuo libro, che loro lo apprezzerebbero molto.

This contrasts with the behavior of the low complementizer *di* (which Rizzi calls a nonfinite complementizer), which only allows topicalization to its right in (29):

- (29) a. Credo, il tuo libro, di apprezzar-lo molto.
 I.think the your book that[-fin] appreciate-it much
 ‘I think that they will appreciate your book very much.’
 b. *Credo di, il tuo libro, apprezzar-lo molto.

This indicates that *di* in Italian cannot be in the same position as *che*: but if *di* is a low complementizer in FinP whereas *che* is a high complementizer in *ForceP*, these facts would immediately be explained. Some languages like Spanish even allow double complementizer constructions:

- (30) Susi dice **que** *a los alumnos* (**que**) les van a dar regalos
 Susi says that DAT the students that cl. go to give presents
 ‘Susi says that they are going to give the students presents.’

There is a great deal of evidence of high and low complementizers, and even double complementizer constructions even outside of Romance. Even in English, Haegeman (2012) notes two such examples below. Because *that* never behaves as a low complementizer alone, It appears that *that* in FinP can only be licensed if *that* is also realized in ForceP:

- (31) a. She maintained **that** when they arrived **that** they would be welcomed.
 b. He reminds me **that** in the days of Lloyd George **that** business leaders were frequently buying their way in.

Larsson (2017) provides a survey of double complementizer constructions across the Scandinavian languages, providing an example from Icelandic, from Thráinsson (2007) below. *Sem* is a relative complementizer. The high or low complementizer *að* can follow it:

- (32) þetta er bokin sem (að) eg keypti
 This is book.DEF that that I bought
 ‘This is the book that I bought.’

I conclude this subsection with evidence that some Bantu languages distinguish between a high, phasal complementizer and a low, non-phasal complementizer. Carstens and Diercks (2009) shows that in Lubukusu, some clauses are transparent for hyperraising, which is raising out of a finite clause, while others are not transparent for it. Here are some examples from Lubukusu, where what they call hyperraising is possible with the complementizer *mbo*:

- (33) Mikaeli a-lolekhana **mbo** a-si-kona.
 Michael 1SA-seem that 1SA-PRES-sleep
 ‘Michael seems to still be sleeping.’

But this raising is not possible with the complementizer *-li* which agrees with the matrix subject:

- (34) * Mikaeli a-lolekhana **a-li** a-si-kona.
 Michael 1SA-seem 1CA-that 1SA-PRES-sleep
 ‘Michael seems to still be sleeping.’

Under this analysis, *mbo* is the low, non-phasal complementizer, and *-li* is the high, phasal complementizer.⁸ We now move onto infinitives.

3.3 Infinitives are truncated in the C domain

Adger (2007) notes a contrast between English and Italian that we will build further upon in section 4.1: topicalization is not allowed at all in English infinitives (Hooper and Thompson (1973)):

- (35) * I decided, [your book]_i, to read t_i.

⁸As a matter of fact, under my analysis of finiteness, it will turn out that Lubukusu does not have hyperraising at all, because *mbo* is a low complementizer, and all clauses headed by a low complementizer are nonfinite. As such, according to my account, this would in fact be an instance of raising.

Adger also notes that the complementizer *for* in English rejects topics. As Adger suggests, I agree with him that this indicates that *for* is a low complementizer in Fin:

- (36) * I propose, [these books]_i, for John to read t_i

Following Adger among others such as Haegeman (2006), Barrie (2007) and Shlonsky and Soare (2011), I also take this to be evidence that infinitives are truncated: as we will see, this truncation can differ between languages like English and Italian.

There is strong reason to believe that there are many more projections than what Rizzi (1997) has initially claimed, and the number of functional projections has indeed increased in works since then such as Haegeman (2012). For our purposes, I will present only the additional projections which are relevant to infinitives–IntP and WhP in particular.

The layer IntP is short for InterrogativeP, which according to Rizzi (2001) is higher than FocusP: Spec,IntP houses *why*. Shlonsky and Soare (2011) provides a convincing argument that *why* is base-generated in position lower than Spec,IntP and moves up to it, in the form of infinitives. Note that the infinitive form is very marginal at best, but the finite form is fine:⁹

- (37) a. ?? I asked Bill why to serve aubergines.
b. I asked Bill why I should serve aubergines.

Given that we have already seen that TopicP is truncated in English infinitives, it is unsurprising that a functional projection ordered even higher is truncated as well.

Let us move to WhP. The fact that focalization is impossible with English infinitives whereas *wh*-infinitives in English do exist, ex. *I know what to eat*, is not expected under Rizzi's original account, where all *wh*-words move to Spec,FocP. As such, Barrie (2007) and Shlonsky and Soare (2011) have assumed the addition of a further functional projection on top of FinP, WhP, which *wh*-elements first move into prior to moving to Spec,FocP.¹⁰ Even in a language where fronted focus is possible such as Italian, which also has *wh*-infinitives, Haegeman (2006) and Bocci (2007) note that focalization is very marginal:

- (38) ?? Gli sembra le sedie di aver venduto (, non il tappeto)!
To him-seems the chairs to have sold (, not the carpet)
'It seems to him that the chairs have sold! (not the carpet).'

⁹Although it is not relevant for our purposes, Shlonsky and Soare (2011)'s argument that it is base-generated lower is as follows. The following question can be construed in two ways: one in which *why* is construed within the matrix clause, and one in the embedded infinitival clause:

- (i) Why did you ask her to resign?
a. What is the reason *x*, such that for *x*, you asked her to resign?
b. What is the reason *x*, such that you asked her to resign for that particular reason *x*?

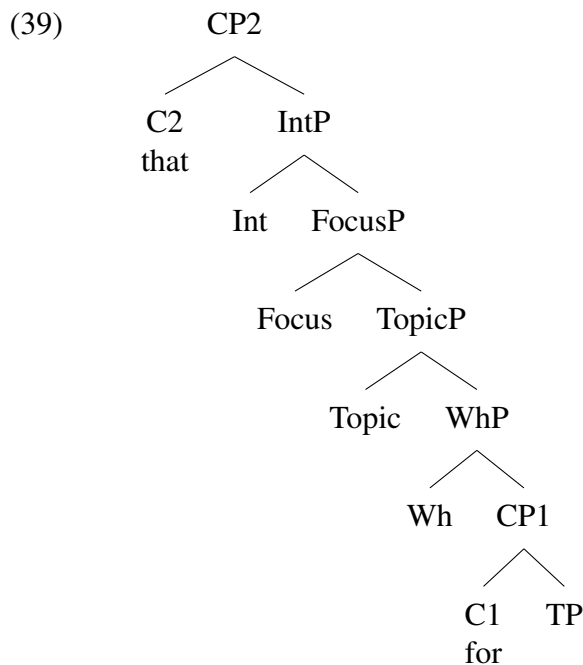
¹⁰It seems that there is a WhP on top of ForceP as well. Henry (1995) notes that Belfast English permits indirect questions introduced by a *wh*-element that isn't a subject, to the left of the high complementizer *that*:

- (i) I wonder which dish that they picked.

This seems to be very common crosslinguistically; Larsson (2017) notes that several Scandinavian languages allow such constructions. At this point, an obvious question to be asking is why there isn't yet another FocusP, TopicP, IntP etc. on top of CP2 as well. But it simply seems to be the case that this is not empirically attested. So this does not put my definition of a high complementizer in jeopardy.

I have shown that infinitives are truncated under a Rizzi-style account of the C domain. If Pesetsky is right in that finiteness is a matter of clause size, then it is difficult to reconcile this with the fact that for Rizzi, finiteness is determined via FinP—because for Rizzi, finiteness is not a matter of clause size. Unlike Rizzi, Pesetsky’s derivational account of finiteness is able to make the correct empirical predictions in section 2—whereas Rizzi’s account does not make any predictions. Although it is commonly assumed that *that* is realized in ForceP as briefly discussed in section 1, why shouldn’t it be able to be realized at FinP, as long as it is finite?

Furthermore, there is redundancy between those who assume that infinitives are truncated under Rizzi’s framework, and the notion of a FinP to begin with. Why do infinitives need to be truncated if finiteness is determined at FinP? What seems more reasonable is that these infinitives are nonfinite *because* they are truncated, and this makes sense if finiteness is a matter of clause size. Thus, I believe that Rizzi’s account of finiteness is missing a greater empirical generalization here: namely that *all* infinitives are truncated in some manner. And this what I will argue for in the next section. To start doing so, I propose getting rid of the labels of ForceP and FinP and replacing them simply with CP2 and CP1 respectively:



This is what I hope to be the novel idea of the paper. While I am far from the first to assume that infinitives are truncated, I am synthesizing the approach to finiteness as a matter of clause size together with Rizzi’s work on the split C domain. Unlike Rizzi, I am assuming that finiteness is *not* determined by CP1, and I will argue that finiteness is simply determined by whether CP2 is truncated or not. In the next section, I empirically justify this definition of finiteness.

4 The size of infinitives

The following hierarchy that was represented in (39) above will be assumed throughout the rest of this section:

(40) CP2 > IntP > FocP > TopP > WhP > CP1 > TP

I present a crosslinguistic survey of infinitive sizes in 4.1. In 4.2, I give reasons to believe from four languages that distinguish between high and low complementizers (or lower clausal heads), very similarly to what Rizzi (1997) noted in Italian above, but these are with elements with the exact same phonetic form. This, I believe, shows a fundamental inability for nonfinite clauses to co-occur with high complementizers. Section 4.3 provides further cartographic generalizations concerning the order in (40). Section 4.4 discusses definitions for finiteness and selective opacity.

4.1 Infinitives can differ in size, but are always truncated

As we've seen, Pesetsky posits a single size for all infinitives: no matter the language, whether we are looking at English or Hindi or Hebrew, the infinitives in these languages are only as large as toP. In this subsection, I will argue that this is false; after all, we have just seen preliminary evidence that Italian infinitives allow CLLD while English infinitives do not. This is reason to believe that Italian infinitives are slightly larger than those of English. But let me first provide a quick summary of the properties of the C domain that English infinitives bear:

- (41) a. *Infinitival complementizers*: I am eager for Caitlin to please.
 b. *Wh-infinitives*: I know what to eat.
 c. *No topicalization within infinitives*: *I wanted this book, to read.
 d. *No focalization within infinitives*: *I wanted THIS BOOK to read (not that one).
 e. *No why-infinitives*: ??I asked Caitlin why to eat salad.
 f. *No high complementizer*: I seem (*that) to be happy.

This indicates that English infinitives are *maximally* as large as WhP. The maximal size of an infinitive is the most crucial notion of this paper: I will present novel evidence that languages vary as to the maximal size of their infinitive; there are at least five different sizes which are attested. With the size of English ones established, let us move onto Hindi, which as far as I am aware of represents the minimal maximal size for infinitives based on my crosslinguistic survey.

Keine (2020) provides convincing arguments that Hindi nonfinite complements are smaller than English infinitives. For example, the wh-element *kyaa* 'what' can take scope within the finite embedded clause, as in (42a). But it cannot embedded scope inside the infinitive, as shown in (42b). Keine reports that the sentence is acceptable as long as the wh-element takes matrix scope, such as "what do you know how to do?":

- (42) a. tum jaan-te ho [(ki) us-ne kyaa ki-yaa]
 you know-IPFV.M.PL be.PRES.2PL that he-ERG what do-PFV.M.SG
 'You know what he did.'
 b. *tumhe [kyaa kar-naa] aa-taa hai
 you.DAT what do-INF.M.SG come-IPFV.M.SG be.PRES.3SG
 '(Intended) You know what to do.'

Given the ordering in (40) that I am assuming throughout this section, if WhP is truncated in Hindi, we would also expect the rest of the projections above it such as TopP to be truncated, as-

suming there is no truncation in the middle.¹¹ This prediction is borne out; according to Keine, Hindi infinitives also do not allow topicalization, just like English:

- (43) * [mai caah-taa huu [kitaab-ko kah-naa [ki mai-ne parh-aa
I want-IPFV.MSG be.PRES.1SG book-ACC say-INF.M.SG that I-ERG read-PFV.M.SG
hai]]]
be.PRES.3SG
'(Intended) I want the book, to say that I read.'

Like English, Hindi does not allow a high complementizer to co-occur with the infinitive:

- (44) siitaa [(*)ki prataap-ko dekh-naa] caah-tii thii
Sita that Pratap-ACC see-INF.M.SG want-IPFV.F.SG be.PST.F.SG
'Sita wanted to see Pratap.'

Based on these data, Keine concludes, as I do, that Hindi infinitives are only as large as TP. For Keine, German infinitives are the same size as Hindi's. Wheelock (2015) notes the impossibility of wh-infinitives in the Germanic languages German, Norwegian, Danish and Swedish:

- (45) a. * Ich weiß nicht [was zu kaufen].
I know not [what to buy.INF]
'I do not know what to buy.' German
- b. * Han har glömt [vad att köpa].
He has forgotten [what to buy.INF]
'He has forgotten what to buy.' Swedish
- c. * Det er uklart [hva å gjøre].
It is unclear [what to do.INF]
'It is unclear what to do.' Norwegian
- d. * Han har glemt [hvad at købe].
He has forgotten [what to buy.INF]
'He has forgotten what to buy.' Danish

In these languages, Wheelock notes that embedded clauses with wh-elements are still possible, as long as the clause is finite. This is unsurprising given that the infinitives in these languages are deeply truncated. But as we will discuss, it appears that Icelandic and Swedish are slightly larger.

I would also like to show below that Dutch (from Wheelock (2015)) and Turkish (my own example) both allow wh-infinitives, the latter of which has nominalized infinitives. Though I do not present further examples of topicalization and so forth, these languages also lack them:

- (46) a. Ik weet niet [wie te bezoeken].
I know not [who to visit.INF]
'I do not know who to visit.' Dutch
- b. Ben ne-yi ye-me-yi bil-iyor-um.
1SG what-ACC eat-INF-ACC know-PROG-PRES.1SG
'I know what to eat.' Turkish

¹¹But truncation in the middle seems to be attested in subjunctive clauses crosslinguistically, even in English, as we will discuss in section 5.

We now know that infinitives crosslinguistically can be as large as TP or WhP, but there appear to be more sizes that are attested crosslinguistically. For example, as we have mentioned in (27a)-(27b), Italian infinitives allow topicalization in the form of CLLD but not focalization. This data is repeated in (47a)-(47b) below:

- (47) a. Il tuo libro, lo ho letto. b. Il tuo libro ho letto.
 the your book, it I have.read the your book I have.read
 ‘Your book, I have read it.’ ‘Your book I have read.’ (but not his)

We have already seen in (29) that Italian has a low complementizer *di*. Given the ordering TopP > WhP, wh-infinitives should exist in Italian. According to Kayne (1981), they do, as seen below. I conclude that Italian infinitives can be slightly larger than English ones, or as large as TopP:

- (48) Gli ho detto [dove andare].
 Him I told [where go.INF]
 ‘I told him where to go.’

Italian, as verified in (28) prior, does not allow the high complementizer *che* to co-occur with its infinitives.

It appears that the language which has the largest maximal infinitive size crosslinguistically is Hebrew. Shlonsky (2014) notes that Hebrew infinitives appear to be almost untruncated in the C-domain, allowing focalization and even why-infinitives, as shown in (49a)-(49b) below:

- (49) a. ani roce [et ugat ha pereg]; lenasot t_i (lo et ugat ha tapuxim).
 I want DOM cake the poppyseed to.try (not DOM cake the apples)
 ‘I want to try the poppyseed cake (not the apple cake).’
 b. ani lo mevin lama la’avor dira.
 I not understand why to move apartment
 ‘I don’t understand why to move apartments.’

Fortuitously, there seems to be at least one property which its C domain lacks: the ability to co-occur with the high complementizer *še*.¹²

- (50) ani roce (*še) lenasot et ugat ha tapuxim.
 I want (*that) to.try DOM cake the apples
 ‘I want to try the apple cake.’

But there is at least one more independent reason to believe that Hebrew infinitives are truncated, and that this is not due to the truncation of the CP2 layer; this involves negative polarity item (NPI) licensing. Matrix negation can license NPI licensing inside infinitive or subjunctive complements but not indicative ones, as first noted by Landau (2004). This is shown in (51a)-(51c) below; we see that the subjunctive is headed by the high complementizer *še* and still allows NPI licensing, so this restructuring property may be due to the truncation of some other functional projection in the C domain.¹³

¹²Edit Doron, in an unpublished handout, has claimed that Hebrew infinitives lack semantic force. Given the lack of clarity as to the presence of force within the narrow syntax, I have chosen not to present her arguments. But considering that my CP2 is identical to Rizzi’s ForceP, this is worth pointing out.

¹³I have been unable to verify whether NPI licensing is possible across propositional infinitives in Hebrew. Subjunctives do not seem to have a propositional semantics. If it is not possible, that would indicate that the functional projection of the C domain responsible for this blocking is PropP. If it is possible, then this layer is something else. I have to leave it open to future research as to what the functional projection between CP2 and IntP is that allows NPI licensing.

- (51) a. Lo darašti me-Gil ledaber im af-exad.
not demanded.1SG from-Gil to-speak with anybody
'I didn't demand of Gil to speak to anybody.' Infinitive
- b. Lo darašti me-Gil_i še-pro_i yedaber im af-exad.
not demanded.1SG from-Gil that-pro will-speak-3SG.M with anybody
'I didn't demand of Gil that he speak to anybody.' Subjunctive
- c. *Lo he'emanti še-Gil yedaber im af-exad.
not believed.1SG that-Gil will-speak.3SG.M with anybody
'I didn't believe that Gil would speak to anybody.' Indicative

This leads me to conclude that Hebrew infinitives may be as large as IntP.

The final and the most difficult maximal infinitive size to distinguish is that of Icelandic, given the controversial status of its complementizer *að*. As mentioned in section 1 prior, *að* seems to come in two different varieties: finite clauses allow embedded topicalization to the right of *að*, whereas the *að* found in control infinitives does not allow topicalization to its left. Given that according to Larsson (2017), Icelandic does not have doubly-filled COMP filter effects, this is more straightforwardly explained if TopP in Icelandic infinitives is always truncated. Data from (13a)-(13b) above is repeated in (52a)-(52b) below:

- (52) a. *Risarnir lofa [að [á morgun]_i éta ríkisstjórnina t_i].
the-giants promise to to-morrow eat the-government
'The giants promised to eat the government tomorrow.'
- b. Risarnir segja [að [á morgun]_i éti þeir ríkisstjórnina t_i].
the-giants say that tomorrow eat they the-government
'The giants said that they will eat the government tomorrow.' Thraínsson (1993)

Thraínsson (1993) took this as evidence that *að* is located under the C domain. For him, *að* was located in AgrSP—right above TP but below CP. Further evidence of this is the fact that Icelandic has V-to-T (V-to-I in older frameworks) movement in infinitives, unlike English, and the verb still occurs after *að*. I believe the first to note this was Sigurðsson (1989). Notice that in (53a), the movement of the auxiliary to T precludes the movement of the embedded verb to T, but this is not the case in (53b), and it does move to T. In control infinitives, V to T is still possible and it is to the right of *að*, as in (53c).

- (53) a. Risarnir segja [að þeir hafi stundum [VP étið ríkisstjórnir].
the-giants say that they have sometimes eaten governments
'The giants say that they have sometimes eaten governments.'
- b. Risarnir segja [að þeir éti_i stundum [VP t_i ríkisstjórnir]].
the-giants say that they eat sometimes governments
'The giants say that they sometimes eat governments.'
- c. Risarnir lofa [að éta_i oft [VP t_i ríkisstjórnir]].
the-giants promise to eat frequently governments
'The giants promised to eat governments frequently.'

The evidence that *að* is above TP seems to be strong. Assuming that it is in AgrSP would not contradict anything in this paper. However, with Rizzi's split-CP structure, we do not need to give

up the idea that *að* in Icelandic is *always* a complementizer—it could simply be a low complementizer realized in CP1 if it is not first realized in CP2. This has an advantage over Thraínsson (1993)'s account of infinitival *að* in AgrSP, given that it would be mysterious as to why the two *að* with different properties have the same phonetic form.

I believe that Icelandic, then, does have an infinitival complementizer. But there is more to be said. The presence of *að* in Icelandic control infinitives should not block the movement of wh-elements preceding *að*. And yet, according to Sabel (2006) Icelandic does not have wh-infinitives, although he provides no corroborating example. Regardless, I take this to be further evidence that WhP and CP1 should be separated into different functional projections, and conclude that the maximal size of Icelandic infinitives is CP1.¹⁴

Our survey is almost complete, but it has been claimed that Middle English infinitives project ForceP. According to van Gelderen (1998), it is possible for *ai* in (54) below to be a focus marker; in which case, *til* would be in ForceP (my CP2), flatly falsifying my upcoming generalization: no infinitive projects CP2. My attempt at glossing her ideas is below:

- (54) Til [all oure bale] ai for to bete
 COMP all our sorrow FOC COMP to heal
 'For all our sorrow to heal...'

However, according to Jay Jasanoff (p.c.), it appears that this is not a double complementizer construction. *Til* plays the role of complementizer *for* in this construction, making it as large as CP1. *Ai* is not a focus marker but rather a word that means *forever*, whereas "for to" in Middle English is itself the infinitive marker, (cf. *to* in English). When this sentence is translated with modern lexical substitutions into its syntactic structure, we obtain *for all our sorrow forever to amend*, which is not so exotic after all.

I will now present the following summary of our survey thus far. It appears that the minimal maximal size for infinitives crosslinguistically is TP; the maximal maximal size is IntP.¹⁵

- (55) a. **Maximally TP Infinitives:** Hindi, German (*minimal maximal size*)
 b. **Maximally CP1 Infinitives:** Icelandic, Swedish
 c. **Maximally WhP Infinitives:** English, Dutch, Turkish
 d. **Maximally TopP Infinitives:** Italian
 e. **Maximally IntP Infinitives:** Hebrew (*maximal maximal size*)

¹⁴Though I do not include a discuss of Swedish in this section, according to Platzack (1986) the Swedish complementizer *att* is similar to Icelandic's *að*. Given that Swedish lacks wh-infinitives, I have classified Swedish together with Icelandic. Furthermore, it is not clear to me whether Norwegian and Danish ought to be classified as TP or CP1 languages, so I have not included them in my list.

¹⁵This conclusion is in fact at odds with Wurmbrand and Lohninger (2019)'s Implicational Complementation Hierarchy (ICH), which assumes that all infinitives that are propositional in nature (in other words, can have a truth value; an example sentence is "I seem to have eaten salad while asleep." It can be false or true whether salad was eaten). As a matter of fact, German has propositional infinitives as Susi Wurmbrand (p.c.) has pointed out to me. This does indicate that German infinitives should be larger than TP, then. One way to reconcile my findings with hers is to suppose that there is very low functional projection in the C domain that is responsible for the propositional semantics of infinitives, such as PropP, with the following ordering: CP1 > PropP. This allows us to get the right results, and it appears that the minimal maximal size for an infinitive crosslinguistically is PropP, but if there is a language which lacks propositional infinitives, then that would likely be a genuine language whose maximal size for infinitives is TP.

There is a pattern to be noted in (55): infinitives never project the full C domain; in particular, Rizzi's ForceP, or my CP2. I have shown that even in Hebrew, with the largest attested infinitives, infinitives cannot co-occur with the so-called high complementizer *še*. Of course, one might be allege that this might simply be because finite complementizers select finite clauses, and never nonfinite ones. But I believe this simply begs the question of *why* finite complementizers (in our terminology, high) do not select nonfinite clauses, and does not lead to a greater understanding of this fact. To explain this, I present a potential finiteness universal in (56):

- (56) **The Maximal Infinitive Size Generalization:** No infinitive projects CP2.
No infinitive can co-occur with a high complementizer.

But we do not yet have enough evidence to conclude that (56) is true, of course. Absence of evidence is not evidence of absence: the fact that there does not seem to be a language reported in the literature with a high or double complementizer construction—with the exception of Middle English, which we have rejected—does not mean that we have a universal. In other words, the pattern seen in (55) is not enough to conclude that infinitives are *always* truncated, and that finiteness can be defined in terms of the presence or lack of the CP2 layer. But in the next subsection, I attempt to present evidence of absence in favor of (56), in which I argue that nonfinite clauses are fundamentally unable to co-occur with a high complementizer.

4.2 Languages with the same phonetic form for high complementizers and other clausal heads: Icelandic, Serbian, Mandarin, Spanish

This subsection presents further evidence for the generalization in (56) above. We will be investigating a specific pattern in four languages, each of which belong to a separate language family. In particular, all of these languages have an element which is uncontroversially high complementizer, corresponding to *that* in English. This element can also appear in nonfinite clauses, which might seem as a genuine counterexample to (56) above. But this element, it turns out, has very different properties when it heads a clause we would consider nonfinite clause: in other words, it is not a high complementizer in these contexts. We will be investigating these properties in this subsection, providing further evidence, in my view, that (56) is correct.

Recall the data from (28)-(29) above, repeated in (57) below. It is possible to topicalize to the right of the high complementizer *che* in Italian but not to its left; it is also possible to topicalize to the left of the low complementizer *di* but not to its right:

- (57) a. Credo che, il tuo libro, loro lo apprezzerebbero molto.
I.think that[+fin] the your book them it will.appreciate much
'I think that they will appreciate your book very much.'
- b. *Credo, il tuo libro, che loro lo apprezzerebbero molto.
- c. Credo, il tuo libro, di apprezzar-lo molto.
I.think the your book that[-fin] appreciate-it much
'I think that they will appreciate your book very much.'
- d. *Credo di, il tuo libro, apprezzar-lo molto.

It turns out that similar contrasts are seen crosslinguistically, even with elements that share the same phonetic form. The first of which is, of course, Icelandic, which we have already discussed

in subsection 4.1 prior: it allows topicalization to its right in finite contexts as in (52a) above, but not at all in control infinitives, as in (52b). This, in my view, is because *að* cannot behave as a high complementizer in control infinitives, because CP2 is truncated.¹⁶

A language similar to Icelandic in some respects is Spanish, according to Villa-Garcia (2012), for which (58) is repeated below. Villa-Garcia (2012) refers to the first bolded *que* as a high complementizer, just like *that*, whereas the lower *que* he refers to as a "jussive/optative" complementizer, which is characteristic of subjunctives. (58) shows that topicalization occurs to the right of the high variety of *que*.

- (58) Susi dice **que** *a los alumnos* (**que**) les van a dar regalos
 Susi says that DAT the students that cl. go to give presents
 ‘Susi says that they are going to give the students presents.’

It seems that for independent reasons, the complementizer *que* cannot occur in Spanish infinitives; according to Lujan (1980) a separate complementizer *de* is used instead, so the facts would not be very different from Italian. But there are other nonfinite contexts outside of infinitives in which low *que* can be used, such as imperatives. In (59) below, Demonte and Fernández-Soriano (2009) point out that the topic *a ese alumno* ‘to that student’ moves to the left of *que*. They analyze the two *que* precisely as I and Villa-Garcia do: *que* comes as both a high and a low complementizer, and the low variety is present in nonfinite contexts like (59).

- (59) A ese alumno, que los profesores no lo dejen salir hasta las 6.
 to that student that the teachers not CL.3SG allow leave until the 6
 ‘Let the teachers not allow that student to leave before 6.’

We are now moving onto Serbian, for which Wurmbrand et al. (2020) has already provided us with a well-developed analysis of complementation that will lay the foundation for the arguments in this subsection—although I will disagree with their conclusion on what finiteness in Serbian is. Wurmbrand et al. (2020) notes that Serbian allows both "finite" and nonfinite complements of verbs like *try*. We see two forms that can be the complement of *try* in (60a): the bare infinitive form without *da*, and *da* together with agreement on the embedded verb. But the infinitive is impossible with the propositional complement of *claim*, as in (60b) below:

- (60) a. Pokušala sam {da čitam / čitati} ovu knjigu.
 tried.SG.F AUX.1SG DA read.1SG / read.INF.IPFV this book
 ‘I tried to read this book.’
 b. Tvrdim {da čitam / *čitati} ovu knjigu.
 claim.1SG DA read.1SG / *read.INF.IPFV this book
 ‘I claimed to be reading this book.’

Our objection of investigation is this *da*. For Wurmbrand et al. (2020), assuming the framework of Wurmbrand and Lohninger (2019), the complement of *try* is an event complement, and only as large as a vP—no TP or CP layers. On the other hand, the complement of *claim* is a full CP. Under this account, *da* itself is not a complementizer, but rather a lower clausal head that can mark vPs, TPs or CPs. I will adopt this analysis for Serbian and Mandarin, but not Icelandic or Spanish. Given the presence of verb-medial focus and topic positions in Serbian and Mandarin, but not in

¹⁶I predict that something very similar is attested in Swedish, as well, but given the lack of evidence in the literature I am unable to present corroborating data.

Icelandic or Spanish, it is difficult to determine whether focalization or topicalization would take place within the V or C domain, as Jim Huang (p.c.) points out.

What Wurmbrand et al. and I disagree on is the nature of finiteness. For them, finiteness is a language specific property, and it is agreement in Serbian. So, the complement of *try* may be finite. In contrast, I will claim that finiteness is in fact not a language specific property, and it is merely the presence of an untruncated C domain. As such, under my account, the complement of *try* is never finite, as it is as large as vP, but rather something akin to an inflected infinitive.

Todorović and Wurmbrand (2016) notes that tenseless complements of predicates such as *try* and propositional complements of predicates like *claim* allow topicalization and focalization, but with different word order. This is possible given that Serbian has verb-medial topic and focus positions. Topicalization in the embedded complement of *try* must precede *da*, but follow *da* with the complement of *claim*. I present my own illustrative examples below:¹⁷

- (61) a. Pokušala sam [ovu knjigu]_i da čitam t_i.
 tried.SG.F AUX.1SG this book DA read.1SG
 ‘I tried to read this book.’
- b. *Pokušala sam da [ovu knjigu]_i čitam t_i.
- c. Tvrdim da [ovu knjigu]_i čitam t_i.
 claim.1SG DA this book read.1SG
 ‘I claimed to be reading this book.’
- d. *Tvrdim [ovu knjigu]_i da čitam t_i.

This looks like Italian. On one hand, we see *da* behave as a high complementizer in the complement of *claim*, as evidenced by (61d). On the other, *da* must behave as a lower clausal head, as shown in (61b), in which *this book* moves to a verb-medial focus or topic position. Once again, I believe that this is evidence of a fundamental inability of nonfinite clauses to co-occur with high complementizers, which Wurmbrand et al. (2020)’s account of finiteness does not predict: language specific accounts of finiteness cannot explain my empirical generalization.

Before moving to Mandarin, given that I will claim later in this paper that control is fundamentally a property of clauses which are truncated in the C domain, it would be important to determine whether subjects can be licensed in the complement of *claim* but not *try*. This is precisely what is the case; the complement of *try* requires OC PRO but that of *claim* can license subjects:

- (62) a. Pokušala sam da (*Mari) čitam ovu knjigu.
 tried.SG.F AUX.1SG DA read.1SG this book
 ‘I tried (*for Mary) to read this book.’
- b. Tvrdim da Mari voli John.
 claim.1SG.F DA Mary loves John
 ‘I claimed that Mary loves John.’

Mandarin has a similar pattern to Serbian. Huang (2018) makes precisely the same argument that I made for Serbian, but in Mandarin instead—his analysis can be straightforwardly translated to

¹⁷Željko Bošković (p.c.) has suggested to me that these examples are marginal with topicalization, but better with contrastive focus. Furthermore, I have verified that with a control predicate like *decide* which takes situation complements, the complement allows topicalization both before and after *da*, as predicted by Wurmbrand and Lohninger (2019)’s ICH, which Wurmbrand et al. (2020) assumes and is based on. That predicates like *decide* can take both finite and nonfinite complements is true in English, as well.

mine. As Huang (2018) convincingly shows, *shuo* behaves as a finite complementizer (in our terminology *high*) when it heads a finite embedded clause. In (63), topicalization is only allowed within the embedded clause, because the complement of *believe* must be finite.

- (63) a. Wo xiangxin [shuo Lisi [zhe-pian baogao]_i xie-wan-le t_i].
 I believe SHUO Lisi this-CL report write-finish-PFV
 ‘I believe that Lisi has written this report.’
 b. * Wo [zhe-pian baogao]_i xiangxin [shuo Lisi xie-wan-le t_i].

But *shuo* behaves as a lower clausal head when it heads a nonfinite embedded clause, such as the complement of *try*, with which the pattern in (63b) is possible. The complement of *try* in (64), which appears to be nonfinite—as evidenced by the requirement of a controlled PRO—involves restructuring, as it allows the embedded object to move up and precede the verb:

- (64) Wo [zhe-pian baogao]_i hui shefa [shuo jinkuai xie-wan t_i].
 I this-CL report will try SHUO as-soon-as-possible write-finish
 ‘I will try to finish this report as soon as possible.’

Once again, we see the fundamental inability of a high complementizer to co-occur with nonfinite contexts. The untruncated CP2 layer blocks topicalization to a matrix verb-medial topic or focus position, as in (63b). But restructuring, and removal of the CP2 layer, allows for this movement to take place, as in (64).

Concerning subject licensing, the complement of *like*—a predicate that takes vP complements similar to *try*—requires an OC PRO but that of *hope* does not, which according to Grano (2017) takes a CP, as predicted:

- (65) a. Xiaoming_i xihuan (*ta_{i/j}) chi shousi. b. Xiaoming_i xiwang (ta_j) chi shousi.
 Xiaoming like he eat sushi Xiaoming hope he eat sushi
 ‘Xiaoming likes to eat sushi.’ ‘Xiaoming hopes to eat sushi.’

This section, in my view, shows that high complementizers, when put into nonfinite clauses, cease to behave as high complementizers: depending on the language they must either behave as low complementizers or as lower clausal heads. This is further evidence that the CP2/ForceP layer of nonfinite clauses is truncated.

4.3 Cartographic predictions

Recall the order of the projections of the C domain from Rizzi, and the following empirical pattern from 4.1. If this ordering is correct, we would be able to make further cartographic predictions on the nature of infinitives crosslinguistically. For example, we would expect languages with wh-infinitives to also have infinitival complementizers.

- (66) CP2 > IntP > FocP > TopP > WhP > CP1 > TP
- a. **Maximally TP Infinitives:** Hindi, German
 - b. **Maximally CP1 Infinitives:** Icelandic, Swedish
 - c. **Maximally WhP Infinitives:** English, Dutch, Turkish
 - d. **Maximally TopP Infinitives:** Italian
 - e. **Maximally IntP Infinitives:** Hebrew

In fact, Sabel (2006) was the first to do a survey of infinitives, concluding that if a language has *wh*-infinitives, then it also has infinitival complementizers. This is evidence for the ordering WhP > CP1 under a Rizzi framework, though Sabel does not assume it. For Sabel, *wh*-movement simply takes place to Spec,CP, so the presence of *wh*-movement necessitates the presence of a C head, but not vice versa. The presence of an infinitival complementizer does not mean *wh*-movement is possible. The Rizzi framework might allow for us to build on Sabel's work.

For example, if a language allows topicalization, such as Italian and Hebrew, then we would also predict that it has *wh*-infinitives and infinitival complementizers. This is already borne out in Italian according to Sabel. For Hebrew, given the presence of *why*-infinitives, we would predict all of the properties below IntP to be possible, as well. As shown in 4.1, almost all of this is borne out. According to Landau (2013), Hebrew has the dedicated complementizer *me-*, appearing with control infinitives but not raising ones. These predictions thus far are borne out, although more data is needed.

I will, however, provide a survey of *tough*-constructions crosslinguistically. I will argue the pattern in (66) is tightly connected to their distribution: in particular, I will show that what we call *tough*-constructions in TP languages like German, CP1 languages like Swedish and WhP languages like English all have different properties.

But first, let us discuss Chomsky (1977b)'s arguments in favor of *tough*-movement involving a step of *wh*-movement. Here is an example of such a construction from English:

- (67) a. It is easy to play sonatas on the violin. (without *tough*-movement)
 b. The violin is easy to play sonatas on. (with *tough*-movement)

Whether inside the C-domain of the infinitive in (68a)-(68b) blocks the embedded *where* from moving to the matrix Spec,CP position:¹⁸

- (68) a. I am wondering whether to eat lunch at Chipotle.
 b. *Where am I wondering whether to eat lunch?

Similarly, extraction out of the infinitive yields this same kind of ungrammaticality, as seen in (69a)-(69d). The middle Spec,CP position was occupied by a Copy of *what sonatas* prevents *this violin* from moving up in (69d).

- (69) a. It is easy to play these sonatas on this violin.
 b. These sonatas are easy to play on this violin.
 c. What sonatas are easy to play on this violin?
 d. *What sonatas is this violin easy to play on?

Under a more modern understanding of the C domain, *tough*-movement takes place to Spec,WhP in English infinitives. But we have seen that the maximally TP-infinitive languages do not allow *wh*-infinitives at all. And yet, German, a maximally TP language has been reported to have *tough*-constructions in the literature, along with both of the CP1 languages.¹⁹

¹⁸This position for *whether* is justified as follows. As this example shows, *whether*-infinitives exist, so they must be in either WhP or CP1. On the other hand, the element *if* is commonly assumed to be in Spec,IntP as Shlonsky and Soare (2011) claim. We predict correctly that infinitives like **I know if to eat salad* are ruled out in English because *if* occurs in a higher position than WhP.

¹⁹Stefan Keine (p.c.) has pointed out to me that Hindi does not have *tough*-constructions, which would be expected given that its infinitives do not have a CP layer.

This is contradictory, given Chomsky (1977b)'s observation that *tough*-movement involves *wh*-movement. How is this possible if maximally TP languages lack a WhP layer? I propose that in fact, the maximally TP languages do not have *tough*-movement after all, allowing us to make significant empirical generalizations concerning languages which do have *tough*-movement, which has consequences on the Exfoliation framework.

Wurmbrand (1994) argues that German does not in fact have *tough*-constructions because it has different properties from *tough*-constructions that we see in English. Out of four of her tests, I will include two. For example, they do not allow arguments intervening between the embedded object and matrix subject (70a) and do not license parasitic gaps (70b):

- (70) a. * Dieses Buch ist schwer Hans zu überzeugen zu lesen.
 this book is hard John to convince to read
 ‘This book is hard to convince John to read.’
 b. * weil das Buch_i [ohne vorher *pg*_i zu kaufen] schwer *t*_i zu lesen ist
 because the book [without before to buy] hard to read is
 (Intended?) ‘Because the book is hard to read without having bought beforehand.’

Following Wurmbrand, I propose that we call this kind of long A-movement in German *leicht*-movement, with the resultant construction a *leicht*-construction. By contrast, genuine *tough*-movement involves a step of A'-movement to Spec,WhP prior to A-movement to the matrix subject position, as Chomsky proposes.

What about movement to Spec,CP1? I predict that it ought to be attested in Swedish or Icelandic. According to Klingvall (2018), it is attested. Klingvall argues that there is a step of A'-movement in Swedish *tough*-constructions and they don't just involve long A-movement like in German—but its properties differ from that of English *tough*-movement. For example, they pattern with English rather than German in licensing parasitic gaps (71a) and are not sensitive to arguments intervening between the embedded object and matrix subject (71b).²⁰

- (71) a. [Den artikel-n]_i är svår att övertala Lisa att be Johanna att läsa *t*_i.
 that paper-CMN.DEF is hard.CMN to convince Lisa to ask Johanna to read
 ‘That paper is hard to convince Lisa to ask Johanna to read.’
 b. Bok-en_i är lätt att kritisera *t*_i utan att ha läst *pg*_i
 book-CMN.DEF is easy to criticize without to have read
 ‘The book is easy to criticize without having read.’

On the other hand, unlike English, the reflexive inside the matrix subject of a *tough*-construction cannot be licensed via a salient potential discourse antecedent, unless a *för*-PP is present:

- (72) * Stackars fotograf-er-na. På utställning-en igår var [bild-er-na på
 poor photographer-PL-DEF at exhibition-DEF yesterday were picture-PL-DEF of
 sig själv-a]_i svår-a att sälja *t*_i.
 REFL self-PL difficult-PL to sell
 ‘Poor photographers. The pictures of themselves were difficult to sell yesterday at the exhibition.’

²⁰For space reasons I've trimmed Klingvall's example. Also, Klingvall distinguishes between verbal TCs and adjectival TCs, to be more specific, but this distinction is immaterial for this paper.

My suggestion on the maximal size of infinitives in German, English and Swedish fits in with Klingvall (2018)'s independent suggestion—that *tough*-movement is not quite like German *leicht*-movement or English *tough*-movement—beautifully. Under my account, all of these languages have different maximal size for infinitives, with Swedish right in the middle, at CP1. It appears that the presence of WhP allows the licensing of the reflexive to go through; perhaps WhP is a phase head, allowing this reflexive binding to go through in the sense of Charnavel and Sportiche (2016) via Spell-Out domains and the insertion of a perspectival center at the top of it.

If Norwegian and Danish do have *leicht*-constructions rather than *tough*-constructions—this allows us to make the following generalization concerning languages with genuine *tough*-movement, like that of English (movement to Spec,WhP, and not Swedish, movement to Spec,CP1):²¹

(73) If a language has genuine tough-movement, then it has wh-infinitives.

I have two remarks concerning this generalization. First, the implication is in one direction: there are many languages such as Turkish which have wh-infinitives but do not have *tough*-constructions. Second, Sabel (2006) and Gärtner (2009) have argued for the generalizations in (74a) and (74b) respectively. A robust indefinite/interrogative ambiguity refers to languages like English which use different words for *who* vs. *someone* whereas German does not.

- (74) a. If a language has wh-infinitives, then it has infinitival complementizers.
 b. If a language has wh-infinitives, then its pronominal system does not have a robust indefinite/interrogative ambiguity.

Elementary logic allows us to extend Sabel (2006) and Gärtner (2009)'s generalizations to mine:

- (75) a. If a language has tough-movement, then it has infinitival complementizers.
 b. If a language has tough-movement, then its pronominal system does not have a robust indefinite/interrogative ambiguity.

These generalizations are interesting in their own right, but as we will see in section 5.1, they, along with the other cartographic predictions that I have discussed in this subsection, have consequences on Pesetsky (2021)'s theory of Exfoliation.

4.4 What is finiteness?

This section has primarily been concerned with crosslinguistic generalizations on the size of infinitives. I have argued for the following empirical generalization: a high complementizer cannot co-occur with a nonfinite clause. I had a two-pronged approach: I first presented a survey on the maximal size of infinitives in several different languages that have been discussed in the literature, noting that none of them co-occur with a high complementizer.

Yet, absence of evidence is not evidence of absence. It could be that such a language simply has yet to be reported. Therefore, I attempted to provide evidence of absence by presenting four

²¹According to Hartman (2011), Italian, French and Spanish all have *tough*-constructions, and according to Sabel (2006) all of these languages have wh-infinitives, so no problem arises. According to Selvanathan (2017), Tamil has *tough*-movement like English, whereas Selvanathan (2018) claims that Malay has *leicht*-movement. The predictions that I am making that Tamil would have wh-infinitives whereas Malay would not. I believe this covers most, if not all, of the languages which have reported to have *tough*-constructions in the literature.

different languages—Icelandic, Spanish, Serbian and Mandarin—in which an element with a certain phonetic form behaves as a high complementizer in contexts we would consider finite, but never as a high complementizer in contexts we would consider nonfinite. A plausible explanation for this fact is that nonfinite clauses necessarily cannot co-occur with a high complementizer.

This, I believe, gives us a foundation to create a theory of finiteness in terms of clause size. It allows us to make precise and falsifiable definitions for a clause which is finite and nonfinite.

- (76) a. A clause is finite iff it is untruncated in the C domain.
 b. A clause is nonfinite iff its CP2 layer is truncated.

Notice that properties that have often been associated to finiteness in the literature such as tense, subject licensing and agreement are not a part of my definition. Such properties merely *correlate* with the presence of CP2 under my account. Indeed, we have seen examples of the complement of *try*—as small as vP as Wurmbrand et al. (2020) argues—bearing agreement in Serbian, and nonfinite clauses in Tamil licensing subjects and bearing even tense. None of this is contradictory under my theory, as it should be.

One aspect of my theory that may seem counterintuitive is the fact that different structures vary crosslinguistically in terms of their opacity. For example, according to Keine (2020), nonfinite clauses in Russian are transparent to A'-movement such as topicalization but opaque to A-movement such as subject-to-subject raising, as shown by the contrast in (77a)-(77b) below:

- (77) a. Kažetsja [čto èti studenty znajut tri jazyka].
 seem.3SG that these students know.3PL three languages
 'It seems that these students know three languages.'
 b. Èti studenty_i kažutsja [t_i učit' tri jazyka].
 these students seem.3PL learn.INF three languages
 (Intended) 'These students seem to be learning three languages.'

It may seem *prima facie* puzzling that a Russian nonfinite clause with a truncated CP2 layer does not allow raising, unlike English. Equally puzzling is the operation of *hyperraising*—that is, raising from a finite clause—which does not seem to require structure removal to take place. As Pesetsky (2021) notes, it is a common phenomenon crosslinguistically.

An illustrative example of hyperraising in Greek, which was first noted by Felix (1989), from Bird (1999) is given below. Greek systematically lacks infinitives and allows hyperraising from subjunctive complements co-occurring with an overt complementizer:

- (78) Ta pedhia arxisan na trexoun.
 the children.NOM started.3PL COMP.SBJV run.3PL
 'The children started to run.'

On one hand, we see that Russian nonfinite clauses do not allow raising. On the other, what seem to be finite clauses in Greek allow it. But I do not think these facts are problematic. I do not know whether Keine (2020)'s theoretical tool of probes having different search domains is the right notion to capture selective opacity effects. But he convincingly shows that selective opacity is a pervasive phenomenon crosslinguistically. And that is all that is needed for this account to go through. The lack of raising from Russian nonfinite clauses and possibility of hyperraising in languages like Greek, in my view, are merely an instance of selective opacity effects. I now discuss the theoretical consequences of my empirical generalizations and these definitions of finiteness.

5 Theoretical consequences

Many questions remain at the end of section 4, but the three that I focus on are the following:

- (79) a. What consequences does this theory have on Exfoliation?
- b. Do truncated finite clauses exist (factives, to be more specific)?
- c. Do clauses whose C-domain is truncated in the middle exist?

I answer the first question in section 5.1: although I believe that my empirical generalization concerning nonfinite clauses is strong evidence in favor of an Exfoliation-style framework, the fact that infinitives can come in different sizes is troubling for Pesetsky (2021). Section 5.2 discusses the second question, in which I argue that not even factives are truncated, following Haegeman (2012)'s analysis of factives. Also in 5.2, I argue that clauses which are truncated in the middle do exist, and are instantiated crosslinguistically in the form of subjunctive clauses—but I claim that these are borderline clauses, rather than finite or nonfinite. This has an important consequence on whether finite control exists under my theory.

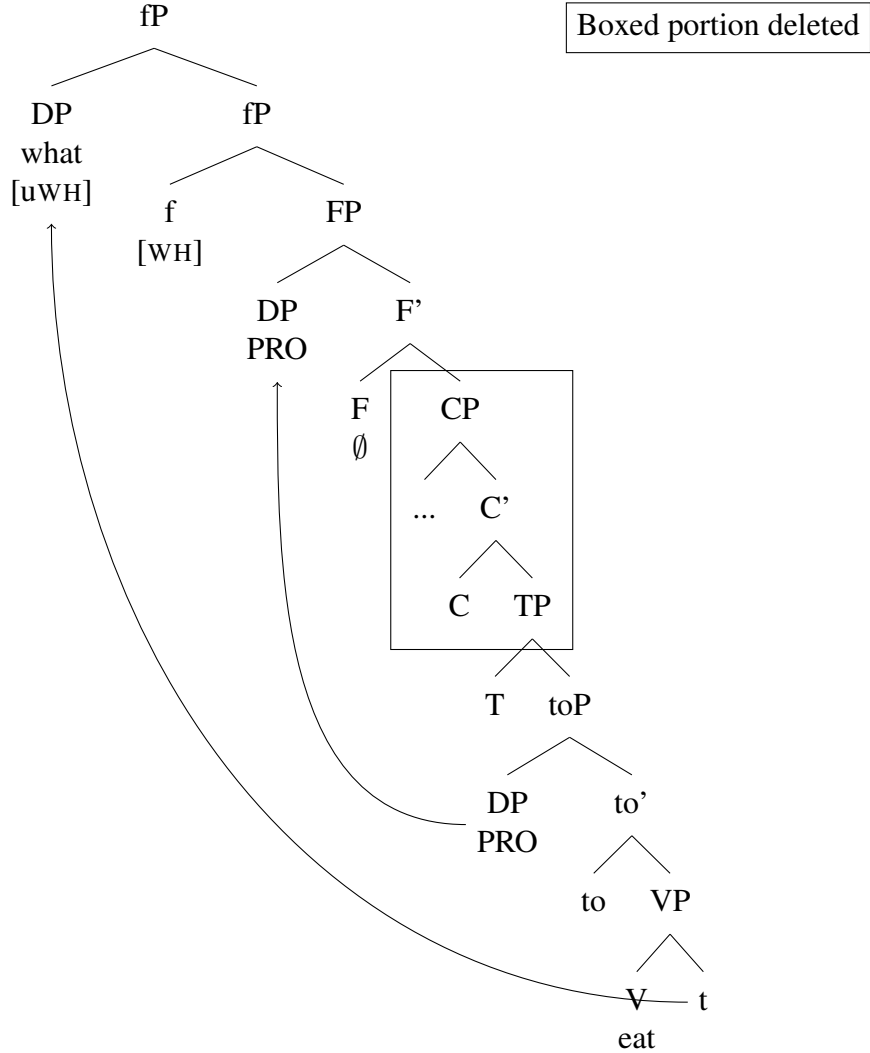
5.1 Consequences on Exfoliation

On one hand, I believe that my empirical generalization—that nonfinite clauses by definition lack a CP2 layer, in which high complementizers are realized—constitutes strong evidence, in my view, that some kind of derivational process, perhaps Müller (2020)'s operation Remove or Pesetsky (2021)'s Exfoliation, is responsible for the truncated size of infinitives. These operations take place because Rizzi's ForceP, or my CP2, is a phase head, and it serves as a barrier for syntactic operations like subject extraction in the case of raising. Under a non-derivational theory of finiteness, this would be coincidental: why should it be the case that nonfinite clauses cannot co-occur with a high complementizer? We require an explanation for this surprising fact.

On the other hand, I believe that section 4 has provided strong evidence that infinitives come in different sizes—at least five to be specific. This is at odds with Pesetsky's "one-size-fits-all" to approaches, where all infinitives have the same size: toP. To see where this goes wrong, let us see an attempt, under the Exfoliation framework, to derive a wh-infinitive such as *I know what to eat*. In this tree, f^0 has a WH-feature allowing the wh-infinitive to be formed.²²

²²I am omitting the movement of F^0 to f^0 for simplicity. One might object that this tree violates minimality conditions on movement. See, for example, Preminger (2014) on why it does not: the probe on f^0 looks specifically for WH-features even if PRO is a more local DP. It can skip past PRO because it does not have WH-features.

(80)



This sets the stage to present the first problem with the Exfoliation framework: it misses generalizations concerning the size of infinitives cross-linguistically. That is, it is not obvious under Exfoliation why *wh*-infinitives do not exist in languages like Hindi, German, Swedish and Icelandic, or why infinitival complementizers do not exist in Hindi and German, given that *all* of these languages have control constructions and hence, superstructures.

Under my account, the presence of infinitival complementizers in English is predicted from the presence of *wh*-infinitives. The differing properties of *tough*-movement in German, Swedish and English is also predicted: the infinitives of these languages come in three different maximal sizes, which are TP, CP1 and WhP. Superstructures, do not allow such predictions to be made, because the infinitives across languages are the same size: it is mysterious why English has infinitival complementizers, why maximal infinitive size correlates with the kind of *tough*-movement that is present, and why TP and CP1 languages do not have *wh*-infinitives.²³

²³In addition, although I did not discuss this in detail in section 2 due to space constraints, Pesetsky assumes that *for* is not a complementizer but rather an irrealis marker. I believe that section 4.1 strongly implies that this analysis is wrong, given that we can predict whether a language has infinitival complementizers or not if it has *wh*-infinitives. There seems to be no language in my survey which has *wh*-infinitives but does not have infinitival complementizers

To start accounting for the lack of wh-infinitives in TP and CP1-languages, it is possible for David Pesetsky (p.c.) to claim these languages do not license WH-features on their superstructures whereas English does. But to see where this goes wrong, recall that there are even larger infinitives than those of English: Italian's infinitives go up to TopP, Hebrew's go up to IntP. Once again, the presence of WhP and CP1 in Italian is predicted from the presence of TopP, which the Exfoliation framework does not predict; the presence of FocP, TopP, WhP and CP1 is predicted in Hebrew from the presence of IntP, none of which the Exfoliation framework predicts.

To account for these predictions, it seems impossible to not assume a Rizzi-style left periphery for superstructures. But at this point his superstructure has become indistinguishable from Rizzi's articulated C domain, and ultimately, he has to end up admitting that infinitives come in different sizes, as well. That is, the Exfoliation framework must concede that languages can select the sizes of their superstructures. The sizes of the superstructures themselves *cannot* be derived; without further stipulations, this could lead to a problem of infinite regress, with superstructures Exfoliating themselves, without end.

Ultimately, I believe that a derivational theory of finiteness is on the right track. However, a derivational theory must admit that there are empirical generalizations concerning the maximal size of infinitives crosslinguistically, and this must be accounted for. I believe that each language must *select* the maximal size of their infinitives; perhaps such a process ends up being completely random. But, crucially, the fact that the maximal size cannot be CP2 is derived via something an operation like Exfoliation or the Müller (2020)'s operation Remove.

5.2 Truncated in the middle: factives and subjunctives

One might ask whether truncation in the middle possible; is it even attested crosslinguistically? I believe that it is attested, and it is very common, in fact, in the form of subjunctive clauses. Whether subjunctives are finite or nonfinite has been a perplexing problem in the literature, with most concluding that they are somewhere in the middle. The theory of finiteness presented here provides a novel way of understanding the borderline nature of the finiteness of subjunctives. But I will first discuss whether factives are truncated—as factive complement clauses have been noted to be missing some properties of the C domain.

5.2.1 Factives

As has been noted extensively in the literature thus far, factives do not allow many of the properties of the C domain such as topicalization or focalization, as Hooper and Thompson (1973), Haegeman (2012) and others point out. An example of topicalization with the complement of *regret* is given below:

(81) * John regrets that this book Mary read.

This has led Miyagawa (2017) to claim that factives are in fact truncated in the C domain. This is at odds with my definition of a finite clause, which is fully untruncated in the C domain. As such, I adopt and defend Haegeman (2012)'s analysis of null operator movement in complements of factive predicates, rather than truncation. I present some corroborating evidence for her account in the form of infinitives, as well.

as well. This strongly implies that *for* is a low complementizer.

Haegeman is not the first to suggest null operator movement in factives. Hegarty (1992) points out that the complement clauses of factives are weak islands for extraction, whereas those of non-factives are not, as seen below.

- (82) a. How do you suppose that Maria_i fixed the car t_i?
 b. * How did you notice that Maria_i fixed the car t_i?
 c. Why does Mary_i think that Bill left the company t_i?
 d. * Why does Mary_i regret that Bill left the company t_i?

As Haegeman (2012) points out, almost every property of the C domain that we have discussed thus far involves a step of A'-movement. Both null operators and a truncation analysis would get the desired result as both disallow movement. If it ever were possible to base-generate elements into a Spec position in the C-domain, for example Spec,TopP, then it would be possible to distinguish between the accounts, as they make different predictions.

Temporal adjuncts, in fact, seem to be base-generated into a Spec position of the articulated left periphery. Rizzi (1997) assumes they are Merged to Spec,TopP, although Rizzi (2001) distinguishes the position of topics from modifiers, positing a dedicated projection, ModP. However, for simplicity, I will continue assume that it is Merged onto Spec,TopP:

- (83) [TopP Last week, [TP I was in Tokyo.]]

If temporal adjuncts are base-generated, then we would predict that they should be acceptable with factives. This prediction is borne out:

- (84) John regrets that during dinner Mary read this book.

As mentioned in 3.2, colloquial English appears to have double complementizer constructions:

- (85) She maintained **that** when they arrived **that** they would be welcomed.

According to my consultants, this sentence is equally acceptable with the factive *regret*, indicating the presence of CP2, TopP and CP1 layers and therefore a highly articulated structure:

- (86) She regretted **that** when they arrived **that** they weren't welcomed.

On the other hand, we would also predict that, as English infinitives are quite truncated, that they cannot take temporal adjuncts. This prediction is borne out, according to data from Shlonsky and Soare (2011). In the contrast below, the adjunct *at 5* cannot refer to the cooking of dinner; it must refer to the time of the promise—that is, it must be an adjunct to the matrix sentence rather than the infinitive. However, this is possible with the finite version of the sentence:

- (87) a. * John promised us at 5 to cook dinner for his children.
 b. John promised us that at 5 he would cook dinner for his children.

I conclude that factives are not truncated in the C domain.²⁴

²⁴Does my theory of finiteness crucially rely on Haegeman (2012)'s analysis, however? That is, would my theory fall apart if it turned out that factives are truncated after all? I believe not, although it would lead to significant difficulties. I would have to give up my definition of finite clauses which are fully untruncated in the C domain, and allow for some truncation in the middle; of course, factives project a CP2 layer. However, as we will see in the next subsection, subjunctive clauses seem to be truncated in the middle, as well. As a result, I would have to assume that there are degrees to which truncation in the middle can take place: it is greater with subjunctives than with factives. But whether defending such a theory is possible is something I must leave open to future research.

5.2.2 Subjunctives and finite control: truncated in the middle

We now move to subjunctive clauses. The status of the finiteness of subjunctives has been perplexing for decades: they seem to both have finite (for example agreement, high complementizers) and nonfinite properties (OC PRO); see, for example, Landau (2004). I believe that the novel approach to finiteness in the paper provides a new angle for understanding the finiteness of subjunctives. I will provide novel evidence from the C domain from subjunctives to show that they are, as has been claimed in the literature, borderline between finite and nonfinite.

Recall the following paradigm from 4.1:

- (88) a. *No topicalization within infinitives*: *I wanted this book, to read.
 b. *No focalization within infinitives*: *I wanted THIS BOOK to read.
 c. *No why-infinitives*: ??I asked Caitlin why to eat salad.
 d. *No if*: *I asked Caitlin if to eat salad.
 e. *No temporal adjunct*: *I asked Caitlin during dinner to eat salad.

Surprisingly, even though subjunctives are headed by a CP2 projection, most of these tests fail:

- (89) a. *No topicalization within infinitives*: *I suggested that this book he read.
 b. *No focalization within infinitives*: *I suggested that THIS BOOK he read.
 c. *No why-infinitives*: *I suggested why she eat salad.
 d. *No if*: *I suggested that if he eat ice cream, then he exercise.
 e. *No temporal adjunct*: ??I suggested that during dinner she eat salad.

This indicates that subject licensing in English is tied to the presence of a CP2 projection: PRO can be licensed with complements as small as TP or even vP, but a full subject which is not merely a minimal bound pronoun requires CP2. Before moving onto subjunctives crosslinguistically, I would like to discuss the phenomenon of finite control.

Under accounts of finiteness like Bouchard (1984), Koster (1984) and Hornstein and Lightfoot (1987), and Pesetsky (2021), obligatory control (OC) is possible into clauses which are as large as IP/TP, whereas CPs block OC—the latter of which are seen as phases in today’s minimalist framework. Landau (2013) considers clause size a "bogus" criterion for OC, because there seem to be cases of so-called "finite" control in languages like Hebrew, the Balkan languages and Spanish. In Landau (2004)’s example (90) from Hebrew below, the embedded clause is in the subjunctive mood, and headed by the high complementizer *še*.²⁵ The null subject of the embedded clause must refer to *Gil*.

- (90) himlacti le-Gil_i še-*ec*_{i/*k} yearšem la-xug le-balšanut.
 I-recommended to-Gil that-ec will-register.3SG.M to-the-department to-linguistics
 ‘I recommended to Gil to register to the linguistics department.’

²⁵That *še* is a high complementizer can be verified with the following example from Shlonsky (2014), in which the topicalized or focalized constituent *Dani* follows *še*.

- (i) ani xošev še et Dani_i pitru t_i.
 I think that DOM Dani, (they)-fired
 ‘I think that Dani, they fired.’

At the time, this was a very strong argument that control complements can be as large as CP. Indeed, it's also unclear how an Exfoliation framework could derive "finite" control constructions. But with the articulated left periphery that I have assumed in this paper, we need to reanalyze what we mean by finite control. There is no doubt finite control complements, such as in Hebrew, can be as large as CP2. But it is possible that these "finite" control complements are in fact truncated in the middle, and hence, not finite but not nonfinite either under my account.

The rest of this section is dedicating to discussing restructuring phenomena in subjunctive control complements. I will claim that "finite" control can only take place in complements that are truncated in the C domain. Ultimately, both defenders of clause size theories of finiteness on one side such as myself and Pesetsky, and Landau on the other side end up both being right: "finite" control complements do project a CP2 layer and contain a high complementizer.

It will not be easy to determine whether subjunctives in Hebrew are truncated at all, given that Hebrew infinitives are the largest on record. I suspect that Hebrew subjunctives might also be equally large, with an additional CP2 layer on top. But there is still independent evidence that subjunctives are truncated, as well. Recall from section 4.1 above the pattern with NPI licensing across clause boundaries in Hebrew; matrix negation can be licensed with infinitive and subjunctive complement clauses but not indicative ones:

- (91) a. Lo darašti me-Gil ledaber im af-exad.
not demanded.1SG from-Gil to-speak with anybody
'I didn't demand of Gil to speak to anybody.' Infinitive
- b. Lo darašti me-Gil_i še-pro_i yedaber im af-exad.
not demanded.1SG from-Gil that-pro will-speak-3SG.M with anybody
'I didn't demand of Gil that he speak to anybody.' Subjunctive
- c. *Lo he'emanti še-Gil yedaber im af-exad.
not believed.1SG that-Gil will-speak.3SG.M with anybody
'I didn't believe that Gil would speak to anybody.' Indicative

I assumed in 4.1 that this restructuring phenomenon was possible *because* some functional projection common to both the Hebrew infinitive and subjunctive was truncated. As it turns out, restructuring phenomena seems to be common with subjunctive control complements crosslinguistically. Ewe subjunctive control complements patterns with Hebrew in terms of NPI-licensing; it is possible across subjunctive clauses, which have an overt PRO, as Satik (2019) argues, but not ones in the aorist mood:

- (92) a. *Kofi_i me-be yè_i dzo o.
Kofi NEG1-COMP YÈ leave NEG2
'Kofi_i didn't say that he_i left.'
- b. Kofi_i me-be yè_i-a dzo o.
Kofi NEG1-COMP YÈ-POT leave NEG2
'Kofi_i didn't say that he_i could leave.'

This pattern isn't limited to NPI licensing across subjunctive clauses; in line with Keine's selective opacity effects, we find that different subjunctive complements are transparent to different operations crosslinguistically. Felix (1989), for example, points out subjunctive complements in Greek are transparent to A-movement, allowing raising in addition to control; Watanabe (1993)

notes the same for Romanian—in both languages, indicatives are opaque to A-movement.²⁶ Landau describes both of these languages as exhibiting finite control. But the rest of this subsection will be dedicated to discussing Japanese subjunctive complements.

Uchibori (2000) extensively notes selective opacity effects in Japanese subjunctive complements, which also have been noted to exhibit finite control with some, but not all predicates—this is similar to the situation in Balkan as Landau notes. Here I will focus on the subjunctives that allow control, though the transparency effects obtain for the ones that do not as well.

Uchibori notes that scrambling out of subjunctive complements can remedy WCO violations (93a), but not out of an indicative complement (93b):

- (93) a. Daremo_i-o [[soitsu_i-no hahayoya]-ga [iinkai_k-ni e_k t_i
 everyone-ACC guy-GEN mother-NOM committee-DAT
 suisensu-ru-yoo(-ni(-to))] tanon-da].
 recommend-NONPAST-SUBJ-COMP ask-PAST
 (lit.) ‘Everyone_i, his_i mother asked the committee to recommend.’
- b. *Daremo_i-o [[soitsu_i-no hahayoya]-ga [iinkai-ga t_i suisensi-ta
 everyone-ACC guy-GEN mother-NOM committee-NOM recommend-PAST
 to] omot-ta].
 COMP think-PAST
 (lit.) ‘Everyone_i, his_i mother thought that the committee recommended.’

Furthermore, a quantifier scrambled out of subjunctive complements may have wide scope over other quantifiers (94a), but not out of indicative clauses (94b):

- (94) a. Daremo-o_i [dareka-ga iinkai_j-ni [e_j t_i
 Everyone-ACC someone-NOM committee-DAT
 suisenru-ru-yoo(ni(-to))] meiji-ta].
 recommend-NONPAST-SUBJ-COMP order-PAST
 ‘Everyone, someone ordered the committee to recommend.’ (∀ > ∃)
- b. Daremo_i-o [dareka-ga [John-ga t_i hihansi-ta to] it-ta]
 Everyone-ACC someone-NOM John-NOM criticize-PAST COMP say-PAST
 (lit.) ‘Everyone, someone said that John criticized.’ (*∀ > ∃)

Finally, Uchibori notes that the reciprocal anaphor *otagai* ‘each other’ must be locally A-bound. Scrambling out of a subjunctive complement can license the anaphor (95a), but not out of an indicative one (95b):

- (95) a. ?Karera_i-o [otagai_i-no sensei-ga [John_j-ni [e_j t_i
 them-ACC each.other-GEN teacher-NOM John-DAT
 hihansu-ru-yoo(-ni(-to))] it-ta.
 criticize-NONPAST-SUBJ-COMP tell-PAST

²⁶Alexiadou et al. (2010) argue that Greek subjunctive complements cannot be analyzed as instances of restructuring. Their evidence is based on two facts: first, event modifiers can modify the event of both the matrix and embedded clause. Second, they also claim that NPI licensing can take place across the subjunctive clause boundary, but it can also be in the matrix clause, as well. I do not find these arguments convincing: even in languages like English, the infinitive complement of *try* can be modified by an event modifier, so even if restructuring was present we would predict this to be possible. NPI licensing itself might merely be an instance of selective opacity: for example, Hebrew bans NPI licensing across indicative clause boundaries while English allows it, so this is again not surprising. Felix’s observation and the fact that indicative complements do not allow raising is itself evidence for restructuring.

(lit.) ‘Them_i, each other_i’s teacher told John to criticize.’

- b. * Karera_i-o [otagai_i-no sensei-ga [John-ga t_i hihans-ita to]
teacher-ACC each.other-GEN teacher-NOM John-NOM criticize-PAST COMP
it-ta.
say-PAST
(lit.) ‘Them_i, each other’_s teachers said that John criticized.’

I believe that these observations from Hebrew, Ewe and Japanese and to a lesser extent Greek and Romanian show that all control complements may be truncated in some regard. To conclude, my theory of finiteness in terms of clause size comes with the welcome advantage of eliminating the surprising phenomenon of "finite" control, which it turns out, based on my theory, is not so surprising after all. This is a new line of research worth exploring.

6 Conclusion

This paper has been an investigation on the size of infinitives. After laying the groundwork for this endeavor in sections 1-3, section 4 presented evidence that the size of infinitives can vary crosslinguistically. I showed that generalizations concerning the maximal size of infinitives crosslinguistically are difficult to for under an Exfoliation-style framework with superstructures in section 5. Languages must be able to select the maximal size of their infinitive. And yet, I also gave what I believe to be a very strong argument in favor for a derivational theory of finiteness like Exfoliation: the Maximal Infinitive Size Generalization—that infinitives can never co-occur with high complementizers. This is surprising under selectional theories, and requires at least some derivational element to finiteness.

I have argued that finiteness really is a matter of clause size, and defined finite clauses as those which are untruncated in the C domain, whereas nonfinite clauses are those which lack a CP2 layer. This paper has only investigated the size of finite and nonfinite *embedded* clauses, not matrix ones. As such, there are many open questions left at the conclusion of this paper. The most obvious one is that *that* can only appear with embedded clauses:

- (96) (*That) Caitlin likes chocolate.

This is a question for all theories, and not mine specifically—perhaps there is just an independent requirement for *that* to be pronounced only with embedded clauses, but it is always present. Another surprising fact that I must leave unanswered at this stage is why topicalization in embedded clauses is not permitted if the high complementizer *that* is dropped, as in (97). It seems that most, or maybe the entirety, of the C domain must be dropped at PF if CP2 also is:

- (97) Lily believes *(that) vegetables, Caitlin doesn’t eat.

I have also not discussed the nature of imperatives like "*Catch him!*" and how they come into being. They are puzzling for an Exfoliation-style framework as well, given that all clauses are born finite, yet imperatives seem to clearly be nonfinite, as discussed in section 1. I leave this open for future research to look into. But it is natural to suppose that they are missing many functional projections, leading to a truncated, nonfinite structure.

It also remains to be seen how this account can be extended to gerunds, which have a nominal nature, and structures like nominalized infinitives in Turkish—for which I presented evidence

in section 4.1 that it is truncated. But at the very least—no matter what one thinks of the analysis of finiteness in this paper—the goal of this paper has been to introduce the reader to novel empirical generalizations concerning finiteness. The inability for nonfinite clauses to appear with high complementizers under Rizzi’s articulated C domain is a mystery worth investigating.

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