

DIMENSIONS OF VARIATION OF THE EPP*

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1. Introduction

The Extended Projection Principle (EPP) was proposed for English as a structural requirement for subjects (Chomsky 1981, 1982). This has been formalized variously as a strong [D] feature on T, triggering overt movement of a DP (Chomsky 1995), as a requirement of certain functional heads for an overt specifier (Chomsky 2000), and even as a requirement on labeling (Chomsky 2013).

Cross-linguistically, it has been proposed that the EPP can be checked by either a verbal or a nominal element (Massam & Smallwood 1997, Davies & Dubinsky 2001), or by either a head or a phrase (Alexiadou & Anagnostopoulou 1998). These two options for checking the EPP can be combined to create a typology of the EPP. Two prior approaches have discussed the nature of such a typology. First, I proposed in previous work that the EPP is a single requirement which can be satisfied in a variety of ways. Some languages satisfy it with a verbal element, some with a nominal element. Some languages satisfy it with a head, and some with a phrase. However, every language must have an EPP-related movement of some form (Doner 2012). I will refer to this as the *2x2 typology*. On the other hand, Biberauer (2010) has posited that the EPP is actually two different requirements: a requirement for a verbal element and a requirement for a nominal element, each of which may or may not exist in a given language. The nominal EPP operates independently from the verbal EPP. Thus, some languages may exhibit both a verbal and a nominal EPP-related movement, while other languages may exhibit neither (Biberauer 2010). I will refer to this as the *independent parameters typology*.

In this paper, I will explore these two different typologies, and show that the 2x2 typology better explains the distribution of EPP-types cross-linguistically. I will begin in §2 by explaining the two typologies and the different predictions that they make. In §3, I will look at some intra-language alternations between EPP-types in Arabic, Afrikaans, and Inuktitut, which show that they are in complementary distribution, as predicted by the 2x2 typology. Finally, in §4, I will look at some apparent counter-examples to the 2x2 typology, French and Malagasy. These appear to have both a verbal and a nominal EPP within a single clause, which is predicted by the independent parameters typology, but disallowed in the 2x2 typology. I will show that only one of the movements is EPP-related, bringing them in line with the 2x2 typology. Lastly, §5 concludes.

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2. Typologies

2.1 The 2x2 typology (Doner 2012)

In the 2x2 typology, the two dimensions of EPP variation cross-classify to create four types, as shown in (1). The first dimension, in the rows of the table, consists of variation in the size of the EPP-satisfying element, contrasting phrasal elements with heads. The second dimension, in columns, consists of variation in syntactic category, contrasting nominal and verbal elements.

(1)

The EPP Checked by...	a Nominal Element	a Verbal Element
a Phrasal Element	DP-EPP (e.g., English)	ν P-EPP (e.g., Niuean)
a Head Element	D ^o -EPP (e.g., Italian)	V ^o -EPP (e.g., Irish)

This results in four main EPP types. First, the DP-EPP exists in languages such as English, in which a DP moves to the specifier of TP. DP expletives are possible in languages with a DP-EPP. The D^o-EPP is exemplified by languages like Italian, Spanish, and Greek, and was first proposed by Alexiadou and Anagnostopoulou (1998). These languages are characterized by a [D] feature on the verb, which surfaces in the domain of T due to V-to-T head movement. This type of EPP occurs in consistent null subject languages (NSLs, see Barbosa 2011). The ν P-EPP type occurs in languages such as Niuean, in which the predicate raises to the specifier of TP (Massam and Smallwood 1997, Massam 2000, 2001). In these languages, there is no rich verbal inflection; instead, it is the verb itself, and not its agreement, which checks the EPP, unlike in D^o-EPP languages. Finally, the V^o-EPP may be able to explain Irish. In such a language, the verb undergoes head movement to T^o. Again, it is the verb itself, not its agreement, that checks the EPP, meaning there is no need for consistently rich verbal inflection. V-to-T movement in V^o-EPP languages is not for tense, and must occur regardless of the tense specifications of the clause. In Irish, non-finite clauses are nominalized, and do not have a T^o (Carnie 2011). This means that there is never an instance of T^o in Irish which does not contain a tensed verb. For arguments supporting the above classifications, see Doner (2012).

This typology predicts that, as both the nominal and the verbal EPP are varieties of a single requirement, languages should be able to exhibit alternations between the types in each dimension. As we shall see later, this prediction is realised. Specifically, Arabic alternates in size between a DP- and a D^o-EPP, and both Afrikaans and Inuktitut alternate in category; the former between a ν P- and a DP-EPP, and the latter between a V^o- and a D^o-EPP. This typology also predicts that every clause in every language should always contain exactly one EPP-type.

2.2 The Independent parameters typology (Biberauer 2010:165)

Biberauer (2010) proposes an entirely different typology of EPP-checking. For Biberauer, T always agrees with both a D and a V. For her, what varies is whether these

features are strong (triggering movement) or weak (agreeing at a distance); if strong, a further point of variation is how the movement is realized (i.e., whether it pied-pipes anything). Thus, Biberauer has V-movement and the D-movement parameters operating independently from each other. If either of these features is strong in a particular language, the resulting movement could cause head or phrasal movement to occur, or even, when both the [D] and [V] features are strong (2e), the head movement of a verb bearing a [D] feature. The resulting possible language types are shown in the table in (2).

(2)

	weak V	V^o	vP
weak D	(a) <i>unattested</i> no movement	(b) <i>Celtic</i> ¹ V-to-T	(c) <i>Niuean</i> vP to specTP
D^o	(d) <i>unattested</i> D-to-T	(e) <i>NSLs</i> V _D -to-T	(f) <i>Malagasy</i> D-to-T vP to specTP
DP	(g) <i>English</i> DP to spec, TP	(h) <i>French</i> DP to specTP V-to-T	(i) <i>unattested</i> DP to specTP vP to specTP

Note that the four language types predicted by the 2x2 typology are also included in this typology. The DP-EPP is represented by (2g), the D^o-EPP by (2e),² the vP-EPP by (2c), and the V^o-EPP by (2b). However, five other language types, two that she claims are attested (2f and 2h) and three unattested (2a, 2d, and 2i), are also predicted by this typology. It is unclear why (2a) may not exist in this typology, but it is predicted to be impossible in the 2x2 typology. Biberauer proposes that (2d) could be unattested because it is always realized as (2e), with V_D-to-T movement. In this case, however, (2f) should be unattested as well, as it also makes use of D-to-T movement, but in an even more complicated fashion. Finally, Biberauer does not posit (2i), but it could exist under a theory with multiple specifiers.³

This typology predicts that some languages might have multiple kinds of EPP movement in the same clause (e.g., 2e, 2f, 2h, and 2i). Of these, (2i) is already unattested, and (2e) results in only one movement, and so isn't necessarily a multiple-EPP language. This leaves French and Malagasy, both of which I will consider in §4. On the other hand, this typology also predicts that some languages might have no EPP-triggered movement at all. Again, this is unattested, and there is no indication of why that might be the case.

3. Intra-Linguistic alternations

In this section I will consider three cases of intra-linguistic alternations in EPP type, in Arabic, Afrikaans, and Inuktitut. Each of these cases illustrate that the multiple types of

¹ Except Breton.

² Note that either (2e) or (2h) are possible accounts of the Romance-type of *pro*-drop (depending on your theory of *pro*), although only (2h) could explain French.

³ Thanks to Daniel Currie Hall (p.c.) for pointing out this possibility.

EPP are in complementary distribution—that one, and only one, EPP type may be attested in any given clause at once. Thus, these cases support the 2x2 typology, in which all of these movements are variable ways of satisfying the same requirement, rather than Biberauer’s typology, in which multiple strong features can trigger multiple instances of movement independently.

3.1 Arabic: Size variation

Arabic exhibits two different word orders, with two different agreement patterns. I argue that each of these different word orders result from a different EPP-checking parameter (Doner 2012).

Aoun et al. (2010) argue that the VSO word order, shown in (3), is derived by raising the verb to F, a position between C° and T°, passing over the subject in the specifier of TP.

- (3) Mša dāk l-ʕabd ʕndha.⁴ [Brustad 2000: 316]
 went-he that the-slave to-her
 ‘The slave went to her.’

In the VSO word order, there is only partial subject-verb agreement. For human subjects denoted by a full DP, the verb will agree only in gender, surfacing in the singular form regardless of the subject’s number features, as shown in (4).⁵

- (4) a. ʔakala l-muʕallim-uun. [Aoun et al. 2010: 76]
 ate.3M.SG the-teacher-M.PL.NOM
 b. *ʔakal-uu l-muʕallim-uun.
 ate-3M.PL the-teacher-M.PL.NOM
 ‘The teachers ate.’

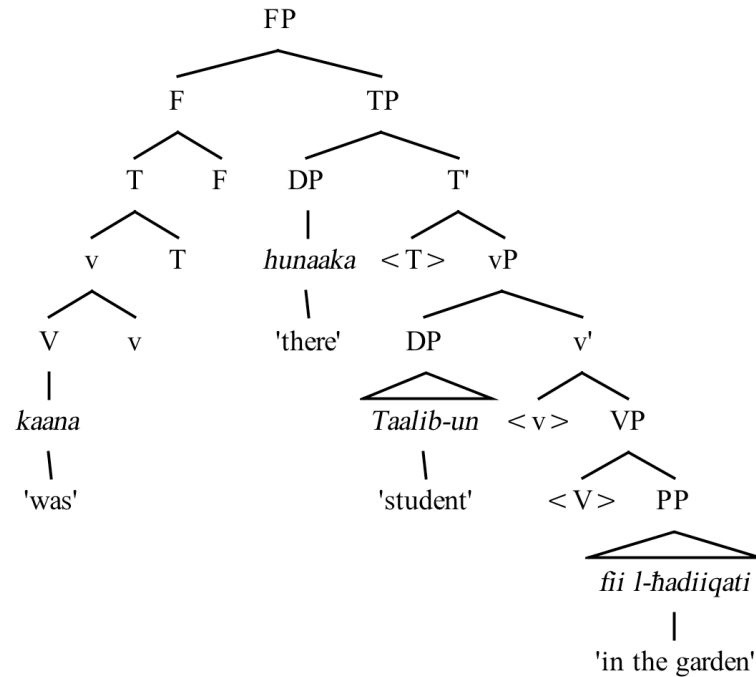
In this word order, expletives are possible in subject position, as shown in (5), and appear in the specifier of TP.

- (5) a. Kaana hunaaka Taalib-un fii l-ḥadiiqati. [Aoun et al. 2010: 70]
 was.3M.SG there student-NOM in the-garden
 ‘There was a student in the garden.’

⁴Examples are glossed as follows: 1/2/3=first/second/third person; AT=actor topic; CT=circumstantial topic; DET=determiner; EXPL=expletive; F=feminine; INDIC=indicative mood; INTR=intransitive; M=male; MOD=modalis case; NEG=negation; NFIN=non-finite; NOM=nominative case; PTPL=participle; PL=plural; PRES=present tense; PST=past tense; Q=interrogative; SBJ=subjunctive mood; SG=singular; TT=theme topic.

⁵ The agreement patterns are in fact quite complex, depending on several factors (see Aoun et al. 1994, Aoun et al. 2010, Brustad 2000, and Holes 2004). What is important to note is that there is not consistent, rich agreement, and thus, it is insufficient for the purposes of checking the EPP.

b.



There are several reasons to suppose that the EPP is checked by a phrasal nominal element in Arabic VSO clauses. First, presumably the only purpose of expletives is to check the EPP, and they are available in this word order. Second, the verb does not surface in T° , and so is unable to check the EPP. Finally, agreement is impoverished, so even if the verb were local to T , there is no reason to propose it bears a D-feature that could check the EPP. In this word order, we can conclude that the EPP is satisfied by a DP in the specifier of TP.

On the other hand, the SVO word order of Arabic appears to have a D° -EPP. First, agreement is much richer. Unlike post-verbal subjects, shown above in (4), pre-verbal human subjects always agree fully, in person, number, and gender (Aoun et al. 1994, Aoun et al. 2010, Brustad 2000, Holes 2004), as shown in (6).

- (6) a. L-muṣallim-uun ʔakal-uu. [Aoun et al. 2010: 76]
 the-teacher-M.PL.NOM ate-3M.PL
 b. *L-muṣallim-uun ʔakala.
 the-teacher-M.PL-NOM ate.3M.SG
 ‘The teachers ate.’

Arabic also allows null subjects in some contexts. These follow the same rich agreement patterns as the SVO word order, as shown in (7), below.

- (7) a. Ya-drus-uun. [Aoun et al. 2010: 59]
 3-study-M.PL
 ‘They study.’
- b. Ya-drus-na.
 3-study-F.PL
 ‘They study.’

Thus, the SVO word order has much in common with D^o-EPP languages, including a topic-like meaning attributed to pre-verbal subjects (Holes 2004, Aoun et al. 2010), rich inflection, the optionality of overt subjects, and a lack of expletives, as expletives only appear post-verbally. As such, I propose that the SVO word order and the null-subject clauses have a D^o-EPP.

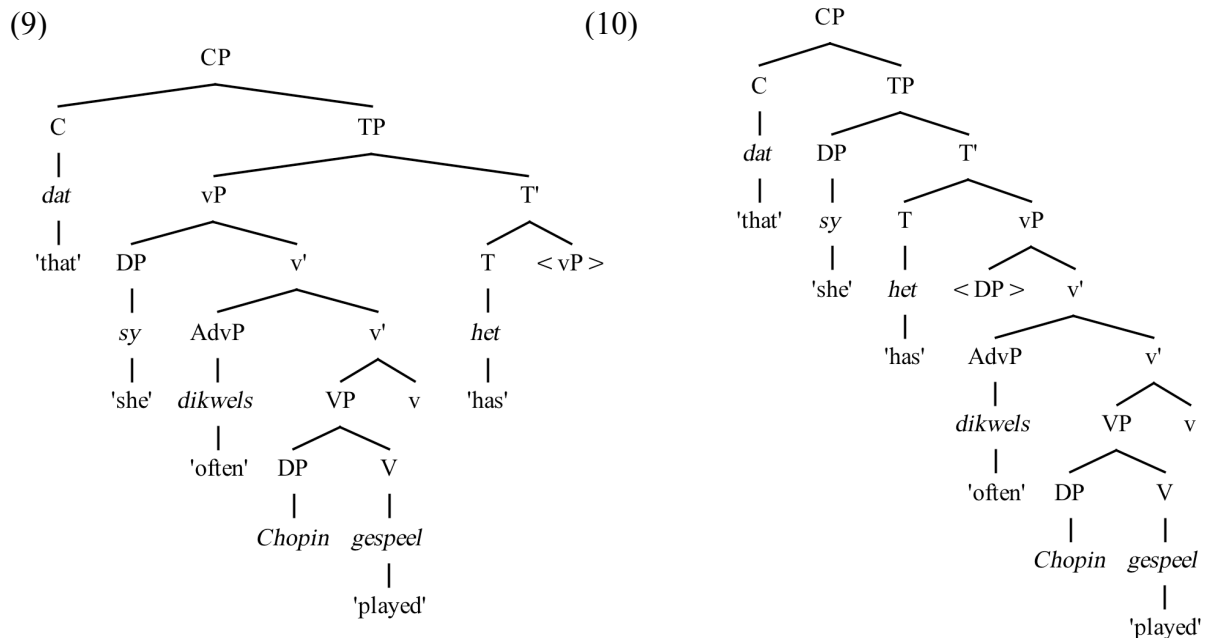
Arabic alternates between a DP-EPP in the VSO word order and a D^o-EPP in the SVO word order, suggesting that they are both varieties of the same rule. In Arabic, the choice of EPP type seems to be related to discourse factors. This alternation supports the 2x2 typology.

3.2 Afrikaans: Phrasal category variation

Modern Spoken Afrikaans allows the word order alternation shown in (8). While (8a) is prescriptively correct, native speakers accept and produce the word order in (8b) as an alternative with no interpretive difference (Biberauer 2010).

- (8) a. Ek weet dat sy dikwels Chopin gespeel **het**. [Biberauer 2010: 171]
 I know that she often Chopin played has
- b. Ek weet dat sy **het** dikwels Chopin gespeel.
 I know that she has often Chopin played
 ‘I know that she often played Chopin.’

Biberauer argues that this word order alternation occurs because different sized constituents raise to the specifier of T in (8a) and (8b). In (8a), the entire vP raises, as shown in the tree in (9), while in (8b), only the subject DP *sy* ‘she’ raises, as shown in the tree in (10). In either case, the phrase that moves raises over the auxiliary.



[Biberauer 2010: 172-173]

The word order alternation is only possible with auxiliaries, however (Biberauer 2010). Lexical verbs must appear sentence finally (11a). The word order in the embedded clause of (11b) can only be interpreted as a matrix clause (Biberauer 2010).

- (11) a. Ek weet dat sy dikwels Chopin **speel**. [Biberauer 2010: 171]
 I know that she often Chopin play
 b. %Ek weet dat sy **speel** dikwels Chopin.
 I know that she play often Chopin
 'I know that she often plays Chopin.'

Just as in English, lexical verbs do not raise to T in Afrikaans (Biberauer 2003, 2009, Vikner 2001, 2005), while auxiliaries are either merged or move there. Since lexical verbs do not raise to T, both vP- and DP-raising are vacuous when there is no auxiliary, causing no difference in word order.

Biberauer analyses Afrikaans as having the same type of EPP as English does, with a T bearing a strong [D] feature, and a weak [V] feature (as in (2g)). She argues that, in the cases where the entire vP raises, T is still probing for [D], and pied-pipes the entire vP. However, she does not provide any possible motivation for the syntax to pied-pipe the entire vP in these situations, when its true goal is the subject DP. The vP does not bear any nominal features—the nominal features are not projected up to the vP, unlike if they were part of the same extended projection. In fact, Travis (2006) shows that 'snowball' effects like this can only happen within the extended functional projection of a single lexical category (i.e., verbal vs. nominal), and so should not cause a verbal projection to be pied-piped because it contains a nominal, as happens here.

On the other hand, the empirical facts of Afrikaans, and even the structures Biberauer proposes, are consistent with another analysis entirely. Rather than optionally pied-piping the entire ν P, Modern Spoken Afrikaans can be analyzed as a mixed system, whose EPP can be checked by either a ν P (as in Niuean), or a DP (as in English). This alternation shows that ν P-EPP and DP-EPP are formal equivalents at some level, and can be substituted one for the other. Biberauer (2010) seems to assume that there must be nominal features of some kind in order to check the EPP. However, the EPP must be able to be satisfied by the verb itself, in order to account for languages such as Niuean, in which a remnant ν P raises to the specifier of TP to check the EPP, even though it does not have rich inflection, and no longer contains any DP arguments.

Thus, it appears that the EPP can be checked by either a ν P or a DP in Afrikaans. This may be because the features on T° which determine the EPP type are underspecified. In Afrikaans, the EPP-type alternation seems to mark a difference in speech register, as DP-raising is restricted to spoken Afrikaans.

3.3 Inuktitut: Head category variation⁶

Most Inuktitut verbs appear in initial position in the verbal complex.

- (12) a. Pitsi-mik **nigi-vunga.** [Labrador; Johns 2007: 541]
 dried.fish-MOD eat-INTR.INDIC.1SG
 b. *Pitsi-nigi-vunga.
 dried.fish-eat-INTR.INDIC.1SG
 ‘I am eating dried fish.’

However, there is a closed class of verbs, such as *tu* ‘consume’ in (13), which obligatorily incorporate their object, causing the object to be in the initial position of the verbal complex.

- (13) a. **Pitsi-tu-vunga.** [Labrador; Johns 2007: 541]
 dried.fish-consume-INTR.INDIC.1SG
 b. *Pitsi-mik tu-vunga.
 dried.fish-MOD consume-INTR.INDIC.1SG
 ‘I’m eating dried fish.’

Johns (2007) shows that this closed class of verbs are all semantically light verbs, and do not contain any root elements.

She proposes that Inuktitut has an EPP-like feature which is checked by roots.⁷ This process is fundamental to the syntax of Inuktitut, and a requirement of every clause,

⁶ This section originated based on a suggestion made by Richard Compton.

⁷ This may fall under the domain of head-EPP languages, or may be a category of its own. Distinguishing these two approaches is a matter for future research. Note that neither typology addresses the possibility of a \sqrt -EPP.

much as DP-raising is in English.⁸ Further support for this approach comes from the existence of so-called dummy roots in clauses without any other root.

- (14) **Pi-qa-nngit-tuq.** [South Baffin; Johns 2007: 559]
 EXPL-have-NEG-INTR.PTPL.3SG
 ‘He has nothing.’
 Lit. ‘He does not have something.’

This seems to be a case of an EPP which is underspecified for type, as it can be checked by any number of roots, including verbs (12a) and nouns (13a), wh-phrases (15a), proper names (15b) and even adjectives (15c),⁹ but is specified as requiring a root. The choice of which root raises is determined by locality.

- (15) a. **Suna-tuq-pin.** [Qamani’tuarmitat; Johns 2007: 560]
 what/something-consume-Q.2SG
 ‘What are you eating?’
- b. **Sherri Lee-ngujsaaq-tuq.** [Qamani’tuarmitat; Johns 2007: 560]
 Sherrilee-look.like-PTPL.3SG
 ‘She looks like Sherri Lee.’
- c. **Qakuqtaq-taaq-tunga.** [South Baffin; Johns 2007: 561]
 white-get/buy-PTPL.1SG
 ‘I bought something white.’

This, too, demonstrates that the verbal and nominal EPP requirements do not operate independently, but are rather varieties of one and the same rule.

4. Apparent counterexamples

As discussed earlier, the 2x2 typology cannot account for cases in which the EPP is checked more than once in the same clause, although such cases are predicted by the independent parameters typology. Thus, in this section, I will show that the two languages which Biberauer (2010) proposes might have two different forms of the EPP simultaneously, French and Malagasy, in fact have only one type of EPP each.

⁸ One difference between this approach and other forms of the EPP cross-linguistically is that the roots seem to be raising to C, rather than to T. However, T plays almost no role at all in Inuktitut, with mood playing the central role in every clause, instead (Johns, p.c.). This may be because T and C are bundled into a single head in Inuktitut, or perhaps because the EPP generally originates on C, but in many languages T inherits it (Chomsky 2008).

⁹ Data such as this suggest that the nominal-verbal dichotomy presented here may be overly simplistic. Further research into the classes of things which may and may not check the EPP cross-linguistically is very much needed.

4.1 French

French has an expletive *il* which indicates that French has a DP-EPP.

- (16) Il est arrivé trois filles. [Burzio 1986: 85]
 it is arrived three girls
 ‘There have arrived three girls.’

French also has V-to-T movement; the verb appears before negation (13a), adverbs (13b), and floating quantifiers (13c), and the lexical verb raises to C in question formation (13d). Thus, the EPP could also be arguably checked by V-to-T movement in French.

- (13) a. Jean (n’) aime **pas** Marie. [Pollock 1989: 367]
 John NEG like.3SG.PRES not Mary
 ‘John doesn’t like Mary.’
- b. Jean embrasse **souvent** Marie.
 John kiss.3SG.PRES often Mary
 ‘John often kisses Mary.’
- c. Mes amis aiment **tous** Marie.
 my.PL friend.M.PL like.3PL.PRES all.M.PL Mary
 ‘My friends all like Mary.’
- d. Aime-t-il Marie?
 like.3SG.PRES-EXPL-3SG.M Mary
 ‘Does he like Mary?’

At first glance, then, it appears that French may have the EPP checked twice, supporting Biberauer’s (2010) typology.

However, Biberauer and Roberts (2008) suggest that V-to-T movement can also be triggered by tense features, and it seems like this might be the case for French. For one, spoken French has poor agreement, and so arguably has no [D] feature on V to check the EPP. Although the verb could conceivably raise to check the EPP inherently (as in Irish), this is not consistent with the empirical facts, as V-to-T does not occur in non-finite clauses in French, as shown in (14). The lexical verb appears after negation (14a), adverbs (14b), and floating quantifiers (14c).

- (14) a. Ne **pas** posséder de voiture... [Pollock 1989: 374]
 NEG not own.NFIN a car
 ‘Not owning a car...’

- b. **Souvent** paraître triste... [Pollock 1989: 377]
 Often look.NFIN sad
 ‘To often look sad...’
- c. J’ai vu mes étudiants **tous** sortir en même temps de la salle.
 I have seen my.PL students all.M.PL leave in same time from the room
 ‘I saw my students all leave the room at the same time.’ [Pollock 1989: 377]

In non-finite clauses, there is no tense feature, and so V-to-T for tense reasons should not occur. However, V-to-T for EPP reasons should still occur, since the EPP needs to be checked in every instance of T⁰.¹⁰ The facts of French contrast with languages where V-to-T occurs for EPP reasons, such as Italian, where the same word order occurs in both finite (15a) and non-finite (15b) clauses.

- (15) a. Gianni non mangia **più**. [Pollock 1989: 412]
 John NEG eat.3SG.PRES no.more
 ‘John no longer eats.’
- b. per non mangiare **più**...
 for NEG eat.NFIN no.more
 ‘in order to no longer eat...’

Doner (2012) argues that verb raising cannot check the EPP in the 2nd person singular subjunctive in Italian, as is revealed by the fact the 2nd person singular pronoun is obligatorily overt in Italian subjunctive clauses (Cardinaletti 2004).¹¹ In this one context, it appears also that the verb does not raise, since it follows adverbs (16).

- (16) Crede che tu **solitamente** esca alle due.
 (he) think.3SG.PRES that 2SG usually exit.PRES.SG.SBJ at two
 ‘He thinks that you usually exit at two.’ [Cardinaletti 2004: 127]

Thus, we see that when there is V-to-T for tense reasons, such as in French, the verb raises only when it is tensed. However, when V-to-T occurs for EPP reasons, verb raising occurs whenever the EPP requires it, even in non-finite clauses. We can conclude that French has only a DP-EPP,¹² and V-to-T movement in French is triggered by a tense feature, and not the EPP.

¹⁰ However, it might not be checked by an overt element, which is a matter outside of the scope of this paper.

¹¹ Doner (2012) argues that this is because the agreement is impoverished in this one context, and is no longer able to check the EPP.

¹² An alternative analysis is that both the verb and the subject DP operate together to check the EPP (Chapman 2013). In such an analysis, there is still only one EPP requirement on T in French.

4.2 Malagasy (Travis 2006)

Malagasy has two types of movement which, on the surface, are candidates for EPP-checking: predicate fronting and D-to-T movement.

Malagasy is a VOS word order language. It has a complicated voice system, with each voice triggering different morphology on the verb, but in all cases the subject or topic appears (underlined> in clause final position.

- (17) a. Actor Topic [Travis 2006: 132]
 [Manasa ny lamba amin'ny savony] ny lehilahy.
 PRES.AT.wash DET clothes with-DET soap DET man
 'The man washes the clothes with soap.'
- b. Theme Topic
 [Sasan-'ny lehilahy amin'ny savony] ny lamba.
 TT.wash-DET man with-DET soap DET clothes
 'The clothes are washed with the soap by the man.'
- c. Circumstantial Topic
 [Anasan-'ny lehilahy ny lamba] ny savony.
 CT.wash-DET man DET clothes DET soap
 Lit. 'The soap is washed-with the clothes by the man.'
 'The man washes the clothes with the soap.'

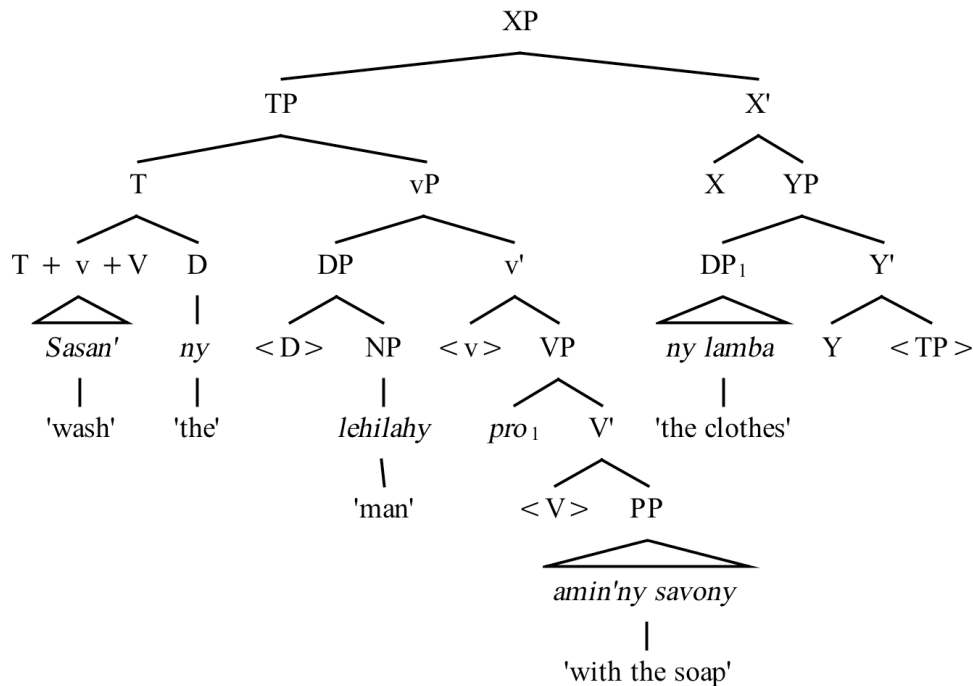
Travis (2006) argues that VOS is the result of predicate fronting, a movement which also checks the EPP in Niuean (Massam 2000, 2001), another Austronesian language.

Travis also argues that there is D-to-T movement in Malagasy on the basis of examples such as (18), where either a determiner (a), a pronoun (b), or a proper name (c) can undergo a process of N-bonding (Keenan 2000). Travis argues that these morphophonological effects are the result of syntactic D-to-T movement.

- (18) a. [Hitan'**ny** lehilahy] ny trano. [Travis 2006: 136]
 TT.see-DET man DET house
 'The house was seen by the man.'
- b. [Hitana**o**] ny trano.
 TT.see-2SG DET house
 'The house was seen by you.'
- c. [Hitan-**dRabe**] ny trano.
 TT.see-Rabe DET house
 'The house was seen by Rabe.'

If we combine the two movements, we can represent a sentence like (17b) with a structure like the one in (19).¹³

(19)



Both D-to-T movement and predicate fronting appear to involve the obligatory movement of some element to the domain of T, and so are likely candidates for EPP-checking operations. However, upon closer inspection, D-to-T movement in Malagasy does not look like it checks the EPP. First, it is not limited to verbs in the T position. For example, it occurs with a preposition in (17a, b).¹⁴ Second, it is not obligatory in every instance of T, as it does not occur with T in the Actor Topic Voice (see (17a)). In fact, it may not even be a syntactic process at all, since it must always result in string vacuous word order (Travis 2006), and it is not iterative, but instead only able to move once (Travis 2006). These latter two facts suggest that D-to-T movement may not be syntactic at all, but rather morphophonological, occurring after spell-out.

Thus, although Biberauer (2010) posits that a language like Malagasy might be an example of a language where the EPP is checked through both predicate fronting and D-to-T movement, it appears that, rather, the EPP is only checked through a single movement operation in Malagasy: predicate fronting.

¹³ Note that Travis (2006) argues that the topic in spec,YP is merged there.

¹⁴ Keenan (2000) proposes that it is DPs which bear genitive case which participate in N-bonding.

5. Conclusion

Different EPP varieties are not the result of independent requirements, but are rather in complementary distribution; only one type is possible in each clause. This can be seen because some languages (such as Arabic, Afrikaans, and Inuktitut) alternate between two varieties. Furthermore, it can be shown that, in languages which appear to simultaneously exhibit more than one type of movement which may check the EPP (such as French and Malagasy), only one is EPP-related. This supports a 2x2 typology, rather than one like Biberauer's.

If we return to the table in (2), repeated below with some modification as (20), we see that, once we move Malagasy and French to their correct cells, over half of the language types Biberauer predicted seem to be unattested. The four that remain are exactly those which are predicted by the 2x2 model.

(20)

	weak V	V°	vP
weak D	(a) <i>unattested</i> no movement	(b) <i>Celtic</i> V-to-T	(c) <i>Niuean</i> <i>Malagasy</i> vP to specTP
D°	(d) <i>unattested</i> D-to-T	(e) <i>NSLs</i> V _D -to-T	(f) <i>Malagasy</i> D-to-T vP to specTP
DP	(g) <i>English</i> <i>French</i> DP to spec,TP	(h) <i>French</i> DP to specTP V-to-T	(i) <i>unattested</i> DP to specTP vP to specTP

Furthermore, of the four possible alternations predicted by the 2x2 typology, we saw that at least three are attested. Arabic varies along the size dimension, but stays constant in requiring a nominal EPP, alternating between D°- and DP-EPP. Afrikaans and Inuktitut both vary along the syntactic category dimension, Afrikaans alternating between DP and vP, and Inuktitut between V° and D°. This variation is controlled by discourse factors in Arabic, register in Afrikaans, and syntactic factors (locality) in Inuktitut.

We can thus conclude that the 2x2 typology, shown again in (21), is empirically motivated cross-linguistically.

(21)

The EPP Checked by...	a Nominal Element	a Verbal Element
a Phrasal Element	DP-EPP (e.g., English, French)	vP-EPP (e.g., Niuean, Malagasy)
a Head Element	D°-EPP (e.g., NSLs)	V°-EPP (e.g., Celtic)

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