



Symmetry in the Asymmetric Universe: Remarks on Kayne (2022)

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Abstract

Kayne (2022) has proposed that the asymmetry of syntax be built into the fundamental operation of Merge itself. This squib reviews some of his proposals and supporting evidence. Departing from Kayne, this squib hypothesized that the asymmetric patterns mainly lie in the functional domain of syntax, and the lexical domain may remain symmetric either within a language or cross-linguistically. The Functional Asymmetry Hypothesis (FAH) is supported by the global symmetry of the VO/OV word order, the commutative conjunction structures in the lexical domain, and the free ordering of event-internal adverbs. If the observation is on the right track, it suggests that the asymmetry of syntax, while empirically robust, cannot be entirely reduced to the operation Merge.

Keywords

(a)symmetry in syntax, word order, linear order, functional domain

1 Introduction

Asymmetric patterns are abundant and robust in natural languages (Haider 2013; Kayne 1994; Sheehan et al. 2017). Strengthening the Linear Correspondence Axiom (LCA) in Kayne 1994, Kayne (2022) argues that the asymmetric grammatical universe is rooted in the most fundamental operation in the core syntax, namely, the operation Merge itself. Therefore, contrary to what is standardly assumed in the Minimalist bare phrase structure (see Chomsky 2020), in which Merge of x and y generates an unordered pair $\{x, y\}$, in Kayne's asymmetric approach, Merge gives rise to an ordered pair $\langle x, y \rangle$ that feeds directly into the linear order at phonetic form (PF). In conjunction with the Extension Condition, in which Merge generates a c-command relation (Chomsky 1994, 1995), he proposes to derive the LCA through Merge.

In this squib, I reconsider the asymmetric patterns discussed in Kayne's paper and conclude that they involve asymmetries in the functional domain, and the sources of asymmetries may come from the asymmetric Logical Form (LF) or information structure. The functional structure is often argued to be universally right-branching because the right-branching structure minimizes the processing cost and/or is isomorphic to the temporal ordering, where a top-down sequence is translated into a left-right linear ordering (Haider 2013; Kayne 1994; Sheehan et al. 2017). If asymmetry is mainly rooted in the functional structure, this suggests that symmetric patterns are more likely to be found in the lexical domain. I will call this hypothesis the Functional Asymmetry Hypothesis (FAH). I support FAH by looking into the following three aspects:

(i) The global symmetry inside the predicate (VO and OV), in contrast to the dominant asymmetric subject-initial order: Asymmetry of the subject follows naturally if we assume that the subject raises to an independent functional category, namely, the Extended Projection Principle (EPP) effect (Chomsky 1995, 2001; Miyagawa 2010).

(ii) The commutative coordination: Some coordinate structures are commutative (left-right symmetry). Evidence from different types of conjunctions in Mandarin Chinese suggests that these commutative conjuncts are restricted to the lexical domain, but not the functional domain.

(iii) The lower adverbs: In many languages, the structurally lower event-internal adverbs are usually commutative with respect to the linear orders (Cinque 1999; Ernst 2002; Frey 2003; Haider 2000). Adverbs of functional projections, on the other hand, do not enjoy the same privilege.

The organization of the squib is as follows. Section 2 reviews the asymmetric patterns discussed in Kayne's paper. Section 3 discusses the potential symmetric patterns and where we can find them. Section 4 concludes the paper.

2 Asymmetric patterns reconsidered

This section reviews some of the asymmetric patterns observed in Kayne 2022. This will subsequently demonstrate that the asymmetric sources of these patterns either are external to the core syntax or reside in the functional domain.

The first observation is a left-right asymmetry in the *wh*-movement and the head-movement. While there are leftward *wh*-movement languages like English, leftward topic languages like Italian and Chinese, and V2 languages like German, there is absolutely no language with the opposite patterns (with obligatory rightward *wh*-movement or a rightward topic or V-penultimate). The observation is resonant with the Basic Branching Constraint (BBC) in Haider 2013. The central idea of these proposals is that the functional projection is asymmetrically right-branching: [_{FIP} Spec F₁ [_{F2P} Spec F₂... [_{XP} X⁰]]] (where F is a functional extension of X), and that phrasal movements to the specifier position and head movements are strictly leftward. However, there is no agreement regarding the base position between the lexical head X and its complement (e.g., the matrix verb and its object). For Kayne (1994, 2022), the universal underlying word order is S-V-O, but for Haider (2013), the underlying word order is S-O-V. Haider (2013) argues that the S-V-O word order is always derived from the verb movement, as is often assumed in the VP-shell analysis since Larson 1988. I will return to this word order asymmetry in Section 3.1, but we can conclude at this point that while there is a strong tendency toward the right-branching structure in the functional projection, it is not as equally robust in the lexical/substantive projection.

The second asymmetric pattern is found in coordinate structures. It is argued that the coordinate structure also conforms to the canonical Specifier-Head-Complement (S-H-C) structure. This applies to Mandarin Chinese as well (Zhang 2006, 2010):

- (1) a. [_{&P} [_{QP} Mei-ge haizi_i] he [ta_i de fuqin]] dou dai-zai jia-li.
 every-CLF child and 3SG GEN father all stay-at home-in
 ‘Every child_i and {his/her} father_i stay at home.’
 (Zhang 2006: 178)
- b. *Ta_i de fuqin he mei-ge haizi_i dou dai zai jia-li.
 3SG GEN father and every-CLF child all stay at home-in
 (Zhang 2006: 178)

The patterns make sense if we assume that the QP *mei-ge haizi* ‘every child’ asymmetrically c-commands (and thus precedes) the bound variable pronoun in the complement position. Another linear asymmetry concerns the temporal coordinate structure, such as the contrast between *They went to the store and bought food* and *#They bought food and went to the store*. Indeed, these patterns can be easily accounted for under an asymmetric analysis, but these examples all involve the coordination of functional structures (QPs/DPs and TPs/CPs), and the latter example even involves the iconicity between temporal ordering and linear

ordering.¹ In other words, a question can be raised whether simple coordination of lexical phrases is also subject to the same linear asymmetry, to which the answer seems to be negative. As we will see in Section 3.2, Mandarin Chinese employs different conjuncts for different sizes of coordinate structures, and the coordination of lexical phrases is typically commutative, in contrast to the coordination of functional phrases.

The third asymmetric pattern concerns the distribution of (proper name) antecedents and pronouns. While some languages allow the pronoun to precede its antecedent (i.e., backward pronominalization), such as *His_i mother likes John_i*, most languages prefer the linear order where a proper name precedes its co-referent pronoun. Moreover, no languages entertain the mirror pattern, in which a pronoun must precede its proper name antecedent. However, it is not clear how deeply rooted this asymmetric effect is in core syntax. It is often pointed out that linear ordering plays a role in processing the antecedent-pronoun sequence, and independent cognitive factors may step in despite Binding Conditions. So even in English, the pronoun-antecedent sequence is much less preferred than the antecedent-pronoun one (Culicover 2013; Gordon and Hendrick 1998). If the findings are on the right track, then this asymmetry cannot count as strong evidence for the asymmetry in core syntax (or in Merge).

All in all, the asymmetric patterns identified by Kayne can hardly support the idea that the linear order is encoded in the operation Merge per se (see also Chomsky 2020; Chomsky et al. 2019: 252). However, they do point out that a universal asymmetry is present in the functional domain, and that the correspondence between the hierarchical structure and the linear structure is more robust in the functional structure (in terms of the binding relation, scope interaction, operator-variable chain, and head movement). In other words, it can be hypothesized that the syntactic objects inside the lexical projection tend to be more symmetric (in terms of linear ordering). I will call this the Functional Asymmetry Hypothesis:

(2) *The Functional Asymmetry Hypothesis (FAH)*

The linear asymmetry found in a language is a direct reflection of hierarchical asymmetry in the functional domain. The lexical domain is underlyingly symmetric, sometimes in a global symmetric fashion.

The global symmetry (or the broken symmetry) means that the original symmetry of the system is broken into pieces and is evenly distributed in the

¹ A reviewer raises the question of why sentences like *They [went to the store] and [bought food]* involve coordination of TPs, but not of vPs or VPs. I suggest that the conjuncts are (at least) TPs because temporal information is encoded in each conjunct, as shown in (i), in which (the initial point of) t1 cannot be later than (the initial point of) t2, and both t1 and t2 occur before the speech time (hence the past tense). The linear sequence is then mapped to linear order in syntax in isomorphism.

(i) They [_{TP} went to the store (at t1)] and [_{TP} bought food (at t2)]

[t1 < t2 < now]

observable phenomena (which can be asymmetric if separately observed), and the (broken) symmetry can only be restored by the global combination of the observable phenomena, so that these phenomena, called a symmetry group, can undergo transformations in a symmetric fashion (becoming commutative and/or associative, etc.) (see Liao 2011, 2014 for discussion). In the next section, we explore such a hypothesis by studying data from Chinese.

3 The more substantive, the more symmetric

3.1 Basic word orders

Traditionally, the basic word order involves the relative (linear) orders between S, V, and O, but the generative syntax has suggested that S and OV/VO should be treated differently. The subject needs to undergo movement to the Spec position of a functional projection in order to satisfy the EPP requirement (Chomsky 1995; Miyagawa 2010), while the same requirement is not imposed on the object, so either the object does not need to move to satisfy the EPP requirement or its EPP feature can be satisfied within the lexical domain associated with the verb (i.e., the low AgrOP in Lasnik 2001 or v^*P in Chomsky 2001). This calls for a re-examination of the basic word order typology in view of the relative ordering between V and O and that between S and P(redicate). In terms of their distributions, OV and VO are almost evenly found in world languages (within SOV and SVO languages, 564 employ the OV pattern and 488 the VO pattern), so it can be argued that OV and VO exhibit a global symmetry (or broken symmetry). That is, by the FAH, the hidden symmetry can be ‘restored’ by a collective observation of the phenomena that might be asymmetric if separately observed. At the same time, it is proposed that V-initial languages are significantly rare (120 out of 1376 languages) (Dryer 2013). The dominant subject-initial distribution and the even distribution of VO/OV can be captured under the FAH – the subject moves leftward to a functional category out of the lexical domain, which creates an asymmetry between S and P (=VO/OV).

Note that even in V-initial languages, it is argued that either the subject does not need to move to the functional category (so that there is no EPP) (McCloskey 1996) or the relevant EPP requirement is satisfied by the verb raising itself (Alexiadou and Anagnostopoulou 1998).² Dryer (1997) also notes that “the difference between VSO and VOS order is a relatively unstable one, both orders being commonly found as basic orders within the same language family” (p.70). Combining Dryer’s typological observation and the syntactic proposal in Alexiadou and Anagnostopoulou 1998, we

² A reviewer asks that if S and V are both in the lexical domain, then FAH might lead us to expect that S and V should bear equal status in the satisfaction of the EPP requirement. In that case, we would predict that there are more V-initial languages. The reviewer’s question in fact concerns an asymmetry of the EPP feature in the language design, so that EPP always picks the agreement-feature in the nominal category. According to Alexiadou and Anagnostopoulou (1998), V-raising may satisfy the EPP requirement only if the verb bears rich agreement morphology, which belongs to functional items. Therefore, this can be considered another type of asymmetry in the functional domain.

can say that in V-initial languages (VSO/VOS), it is V that moves out of the lexical domain to satisfy the EPP requirement. In such cases, S can remain in the same lexical domain as O, and their distributions tend to become symmetric (if not within one language, then across languages in the same language family).

The FAH therefore differs from Kayne's LCA and Haider's (2013) BBC in terms of a predetermined linear ordering in the lexical domain. For S-initial languages, I argue that the linear ordering between O and V is not predetermined upon Merge, so either VO or OV is a possible base order, depending on the head directionality parameter in that language (note that the head directionality parameter is only applicable to the lexical domain under the FAH).

It might also be helpful to review Haider 2013 in this regard. Haider (2013) considers that SOV languages are more harmonic since the subject and the object are licensed by the verb within VP with a uniform directionality. This is indicated in (3) (the symbol < indicates the direction of licensing):

- (3) a. $[_{VP} S < [_V O > V]]$ (S-O-V as a base order: harmonic)
 b. $[_{VP} S < [_V V > O]]$ (S-V-O as a base order: disharmonic)

In SVO languages, the verb movement changes the direction of licensing, but this leaves the S unlicensed. As a consequence, S must undergo movement to a higher functional category in order to be licensed. Haider argues that this is the root of the EPP effect in the SVO language:

- (4) $[_{FP} S F^0 [_{VP} V_i > O t_i]]$ (S-V-O as a derived order)

Two consequences are therefore derived: first, only SOV languages allow scrambling; second, SVO languages force subject raising (EPP). While the consequences may hold in Germanic languages, they are susceptible to challenges when we turn to Chinese. Chinese is generally considered an SVO language; however, it has been argued that in Chinese, the EPP effect is not obligatory (Lin 2012), and Xining Mandarin (a Northwestern dialect of Mandarin Chinese) displays the Japanese/Korean-style scrambling in its syntax despite employing mixed head-initial and head-final word orders (Bell 2019).

A problem of the universal SOV order can also be found in the distributions of manner adverbs in Chinese. It is well known that rightward adverbs are only admitted in SVO languages, but adverbs stay in the leftward position in SOV languages (Ernst 2002; Frey 2003; Haider 2013). Frey (2003: 189) argues that process-related adjuncts (such as manner adverbs) need to minimally c-command the base-position of the main verb in the underlying structure. He argues that a structure like (5b) in German reflects the underlying structure because indefinite objects cannot be scrambled in German, therefore revealing the base ordering inside the VP (Frey 2003: 163). The observation leads to the proposal that the difference between English and German results from verb movement. In the examples below, the manner adverb *carefully* is stranded in the sentence-final position due to verb movement in English (5a), but this is not the case in German (5b):

- (5) a. Peter will [read_i something [carefully t_i]].
 b. Peter wird jetzt [etwas [konzentriert lesen]].
 Peter will now something carefully read

At first sight, the patterns seem to support the universal SOV analysis of Haider (2013). However, if Frey's analysis is on the right track, Chinese cannot be said to allow verb movement because a manner adverb cannot be stranded after the verb on the surface structure in Chinese, as in (6a), so the verb-raising analysis, such as (5a) in English, is not applicable to Chinese.³ Therefore, Chinese must have possessed an inherent VO word order inside the VP, with a manner adverb modifying the verb in its base position, as in (6b). The manner adverb in Chinese (in the form of *A-de*) precedes and minimally c-commands the base position of the verb, and the object is located after the verb:

- (6) a. *Zhangsan [chang_i-le yi-shou quzi youmei-de t_i].
 Zhangsan sing-PFV one-CLF song beautifully
 b. Zhangsan [_{VP}youmei-de [_{VP}chang-le yi-shou quzi]].
 Zhangsan beautifully sing-PFV one-CLF song
 'Zhangsan sang a song beautifully.'

One might argue that in Chinese, manner adverbs can be adjoined to a higher position (such as the light verb), but as Frey points out, these higher manner adverbs (e.g., preverbal manner adverbs in English) are actually not genuine process-related adjuncts but are mental-attitude adjuncts in disguise (see Frey 2003: 191 for details). Note that Frey's argument holds in Chinese as well: genuine process-related manner adverbs, such as *youmei-de* 'beautifully' or *zaogao-de* 'terribly' cannot modify the passive light verb *bei*, but can only modify the verb, as in (7). On the other hand, another adverb *zixi-de* 'carefully' can function as a mental-attitude adverb (so that Zhangsan is being careful in singing that song), so it can modify the light verb.⁴

³ Another indication that manner adverbs are also located inside the VP in Chinese can be found in compounding structures. Manner adverbs are the only type of adverb that can form compounds with the verb (see also Rivero 1992 for evidence in Greek). Since compounding is generally found inside the lexical domain (like SV and VO compounds), it serves as an indication that manner adverbs are also generated inside the lexical domain:

- (i) a. man-pao b. luan-shuo c. xi-qie
 slow-run chaotic-say fine-cut
 'jog' 'talk nonsense' 'mince'

⁴ The distinction between process-related adverbs and mental-attitude adverbs can be elicited in the contrast between (i) and (ii) (Frey 2003: 191). (iii) shows that the test is valid in Chinese as well:
 (i) John sang that song, and in doing so, he was careful. [mental-attitude]
 (ii) *John sang that song, and in doing so, he was beautiful. [process-related]
 (iii) Lisi chang-le na-shou ge. Zheyang zuo de shihou, ta hen *youmei/^{ok}zixi.
 Lisi sing-PFV that-CLF song so do DE time 3SG very beautiful/careful
 'Lisi sang that song. In doing so, he was *beautiful/^{ok}careful.'

- (7) Na jian shi { *zaogao-de } bei Lisi { ^{ok}zaogao-de } wancheng-le.
 that CLF matter terribly PASS Lisi terribly finish-PFV
 ‘That matter was terribly done by Lisi.’

One might argue that manner adverbs in Chinese must adjoin to ν P (or another phrase between ν P and VP), so that after verb-raising, the Adv-V order is still maintained. However, this assumption would risk losing the generality and universality of the theory of adverbs. (How is it, then, that manner adverbs may occur between O and V in German and can be stranded after V in English?)

One theoretical implication of the FAH is that the head directionality can be inconsistent between the functional domain (which is predominantly head-initial, as suggested by the LCA and BBC) and the lexical domain (which can either be head-initial or head-final). The prediction finds empirical support from some recent studies on the mixed word order phenomena (Kalin 2014; Simpson 2022). Specifically, Kalin shows that the OVS word order in Hixkaryana involves a head-final direction in the (lexical) A-domain and a head-initial direction in the (function) A'-domain. Simpson (2022) also shows convincingly that the functional projections (demonstrative, numeral, and classifier phrases) in the nominal structures in Japanese and Korean should be analyzed as head-initial functional head, while the lexical projections (nP and NP) are head-final, as illustrated in (8):

- (8) [_{DP} Kono [_{ClFP} ni-satsu-no [_{NP} atarashi [_{NP} pikaso-no [_{NP} seresutina-no
 DEM two-CLF-GEN new Picasso_{AGENT} Celestina_{THEME}
 syozoga] n⁰]]]]
 portrait_N
 ‘these two new portraits of Celestina by Picasso’
 (Simpson 2022: 592)

Another instance of such patterns (pointed out to me by an anonymous reviewer) can be found in nominal complement structures in Chinese. It is argued by Huang (2016) that gapless relative clauses in Chinese can be analyzed as complements of eventive nouns within a head-final configuration. If Huang’s approach is on the right track, then the nominal functional heads in Chinese are strictly head-initial ([DP D [ClFP Clf [NP]]]), but the complement-noun structure is head-final ([NP CP N]).

3.2 Coordination

It is often argued that the coordination structure like [A *and* B] has an underlying asymmetric structure, in which *and* is the coordination head and A is in the Spec of &P and B is the complement (see Zhang 2006 and the references therein). One piece of evidence comes from the non-commutative nature of the coordinates, so that [A *and* B] is not equivalent to [B *and* A]. The examples in (9) illustrate the contrast through variable binding:

- (9) a. [_{&P} Every man_i [_& and [_{DP} his_{i/j} dog]]] left.
 ≠ His_{s_{i/j}} dog and every man_i left.
 (Zhang 2006: 178)

- b. Mei-ge haizi_i he ta_{ij}-de fuqin dou dai zai jia-li.
 Every-CLF child and 3SG-GEN father all stay at home-in
 ‘Every child and their father stay at home.’
 ≠ Ta_{*ij}-de fuqin han mei-ge haizi_i dou dai zai jia-li.
 3SG-GEN father and every-CLF child all stay at home-in
 (Zhang 2006: 178)

Another piece of evidence comes from the deletability of the double-conjunction construction. Some languages allow double conjunctions, for example, the *et...et* construction in French and the *you...you* (又...又) construction in Chinese (see Zhang 2006: 180):

- (10) a. Na ge nühair [_{&P}(you) meili_{AP} you dafang_{AP}].
 that CLF girl and pretty and graceful
 ‘That girl is both pretty and graceful.’
 b. Zhangsan zai zuotian-de-paidui [_{&P}(you) changge_{VP} you tiaowu_{VP}].
 Zhangsan at yesterday-DE-party and sing and dance
 ‘Zhangsan sang and danced at the party yesterday.’

The observation is that the first conjunction can be deleted, but not the second one, and the obligatory occurrence of the second conjunction suggests that it is the real conjunction head. Namely, the syntax of the double conjunction is as follows:

- (11) [_{&P}(you) XP [*you*⁰ YP]]

As previously shown, the non-commutativity of the conjuncts also shows up in sentential coordination:

- (12) Lisi zou-jinlai, erqie/ranhou zuo-xia.
 Lisi enter and/and.then sit-down
 ‘Lisi entered and sat down.’
 ≠ #Lisi zuo-xia, erqie/ranhou zou-jinlai.
 Lisi sit-down and/and.then enter

The non-commutativity of the conjuncts, however, is less obvious when it comes to the coordination in the lexical domain. It is noted that in Mandarin Chinese, the lexical choice of the coordinative conjunction varies according to syntax-semantics of the conjoined phrases (Aoun and Li 2003). Specifically, we can distinguish at least four types of conjunctions: (i) the conjunction of the lexical nominal predicates (usually NPs) is *jian* (兼) ‘and’;⁵ (ii) the conjunction of the

⁵ As pointed out by an anonymous reviewer, *jian* ‘and’ can also coordinate larger DP structures when the two DPs refer to the same individual. In this case, asymmetry emerges again because the sentence involves a functional asymmetry between an antecedent and a pronominal, which imposes a strong preference for linear precedence in Chinese (Huang 1982). The same concern applies to the *you...you...* coordination. In both (i) and (ii), it is considered far more acceptable when the antecedent *mei-ge xuesheng* ‘every student’ precedes the pronominal *tamen-de baomu/mama* ‘their nanny/mothers’:

lexical verbal/adjectival predicates (usually VPs and APs) is *you...you* ‘and’; (iii) the conjunction of functional nominal phrases (#Ps, DPs, and QPs) is *he* (和) ‘and’; and (iv) the conjunctions of clauses (IP and CPs) are *erqie* (而且) ‘and’ and *ranhou* (然後) ‘and.then’. The former two conjuncts can coordinate phrases belonging to the lexical domain, so the FAH predicts that only the former two can be commutative. This is indeed the case, as shown in the contrast between (13a–b) and (13c–d). The point here is that when functional items (such as DPs and QPs) are not included in the coordination, the linear orders remain symmetric (being commutative). This suggests that the source of the asymmetry does not lie in the syntax of conjunction per se, but comes from the logical-functional relations among functional items (e.g., QPs must c-command the bound pronominals). When functional items do not occur, asymmetry does not arise, as in (13a–b):

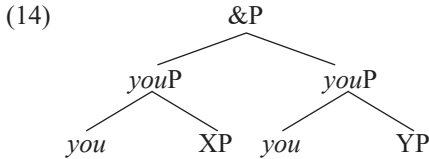
- (13) a. Wo renshi yi-wei [yisheng jian hushi]. [NP]
 1SG know one-CLF doctor and nurse
 ‘I know a doctor and nurse.’
 = Wo renshi yi-wei [hushi jian yisheng].
 1SG know one-CLF nurse and doctor
- b. Ta [(you) meili/changge you dafang/tiaowu]. [AP/VP]
 3SG and pretty/sing and graceful/dance
 ‘She is both pretty and graceful./She sings and dances.’
 = Ta [you dafang/tiaowu you meili/change].
 3SG and graceful/dance and pretty/sing
- c. [Mei-ge ren_i he ta-de_i gou] dou shi hao pengyou. [QP/DP]
 every-CLF person and 3SG-GEN dog all be good friend
 ‘Everyone and their dog are good friends.’
 ≠ [Ta-de_j gou he mei-ge ren_i] dou shi hao pengyou.
 3SG-GEN dog and every-CLF person all be good friend
- d. Ta [lai Taibei erqie (ta) zhaodao-le gongzuo]. [IP/CP]
 3SG come Taipei and 3SG find-PFV job
 ‘He came to Taipei and then found a job.’
 ≠ Ta [zhaodao-le gongzuo erqie (ta) lai Taibei].
 3SG find-PFV job and 3SG come Taipei
 ‘He found a job and then came to Taipei.’

As for the deletability of the first conjunct in the double-conjunction structure, the commutativity of the (*you*)-XP-*you*-YP structure suggests a rather flat structure that is double-headed, as in (14), and the structure can be linearized either as [*you* XP *you*

(i) Ta shi [_{DP} mei-ge xuesheng de siji] jian [_{DP} tamen-de baomu].
 3SG be every-CLF student GEN driver and 3PL-GEN nanny
 ‘He is every student’s driver and their nanny.’

(ii) Ta you [_{VP} gen mei-ge xuesheng shuohua] you [_{VP} gen tamen-de mama tiaowu].
 3SG and with every-CLF student talk and with 3PL-GEN mother dance
 ‘He talked to every student and danced with their mothers.’

YP] or [*you* YP *you* XP].⁶ Moreover, it can be further hypothesized that it is always the last conjunction (after linearization) that must be pronounced, so the deletability of the conjunction is simply a matter of linearization and PF, but not an indication of the Spec-head relation in syntax (which does not imply commutativity):



3.3 Adverbs

It has been extensively observed that event-internal (circumstantial) adverbs (e.g., temporal, causal, locative, instrumental adjuncts) are relatively unordered with one another (Cinque 1999; Ernst 2002; Frey 2003; Haider 2000), as shown in the German examples below (from Frey 2003: 175). Note that in German, indefinite phrases cannot scramble, so the permutation cannot be attributed to any movement or scrambling:

- (15) a. Er hat gerade irgendwo mit etwas viel Geld verdient.
 he (has) right.now somewhere with something much money earned
 'He earned much money with something somewhere right now.'
 b. Er hat gerade mit etwas irgendwo viel Geld verdient.
 he (has) right.now with something somewhere much money earned

According to Frey (2003), the base positions of event-internal adverbs originate in the lexical domain (they are minimally c-commanded by the base position of the highest ranked argument, i.e., inside the *v*P or VP). The free ordering of event-internal adverbs can be observed in Chinese as well in (16):⁷

⁶ In view of the non-endocentric and feature-sharing view of Merge and Labeling (Chomsky 2013, 2020), such double-headed structures should be allowed as long as the two heads share the same feature (in this case, the conjunctive feature [&]).

⁷ We can use the aspectual negation *mei-you* 'NEG-have' (which occupies the aspectual phrase immediately above *v*P) to detect the base position of the (circumstantial) event-internal adverb:

- (i) Zhangsan [_{Asp} *mei-you* [_{vP} *zai-jiaoshi yong-daozi ge-shang ziji*]].
 Zhangsan NEG-have at-classroom with-knife cut-injure self
 'Zhangsan did not cut himself with a knife in the classroom.'

On the other hand, functional adverbs cannot occur under the aspectual negation, suggesting that they are located higher than *v*P:

- (ii) a. Zhangsan *mei-you* **dagai*/**qishi* qu-xuexiao.
 Zhangsan NEG-have probably/actually go-school
 b. Zhangsan *dagai*/*qishi*/*bu-keyi* *mei-you* qu-xuexiao.
 Zhangsan probably/actually/NEG-can NEG-have go-school
 'Zhangsan probably/actually did not go to school.'
 'It is not allowed for Zhangsan not to go to school.'

I thank a reviewer for urging me to clarify this point.

- (16) a. Lisi [_{Temp.} xiawu-san-dian-zheng] [_{Loc.} zai-jiaoshi] [_{Inst.} yong-daozi]
 Lisi afternoon-3-o'clock-at in-classroom with-knife
 ge-dao ziji.
 cut self
 'Lisi (accidentally) cut himself with a knife in the classroom at 3 this afternoon.'
- b. Lisi [zai-jiaoshi] [xiawu-san-dian-zheng] [yong-daozi] ge-dao ziji.
 c. Lisi [zai-jiaoshi] [yong-daozi] [xiawu-san-dian-zheng] ge-dao ziji.
 d. Lisi [yongdaozi] [xiawu-san-dian-zheng] [zai-jiaoshi] ge-dao ziji.
 e. ...

The free ordering of event-internal adjuncts contrasts sharply with the functional adverbs that are licensed in the higher (functional) domain. Generally, functional adverbs are strictly ordered in accordance with the functional hierarchy (Cinque 1999). Consider modal adverbs in Chinese below:

- (17) a. [evid. > epis. > deon.]
 Zhangsan qishi dagai yinggai qu xuexiao.
 Zhagnsan actually probably should go school.
 'Zhangsan actually probably should go to school.'
- b. *[deon. > evid. > epis.]
 *Zhangsan yinggai qishi dagai qu xuexiao.
 Zhangsan should actually probably go school
- c. *[epis. > evid. > deon.]
 *Zhangsan dagai qishi yinggai qu xuexiao.
 Zhangsan probably actually should go school
- d. *...

The ordering of functional adverbs is isomorphic to the universal hierarchy of the functional heads, in which the evidential head dominates the epistemic modal, which in turn dominates the deontic/root modal (Cinque 1999; Hacquard 2006; Kratzer 1991). Such distributions of (un)ordered adverbs, again, are captured by the FAH. The functional domain is asymmetric (hence the strict ordering of adjuncts in the higher domain), whereas the lexical domain remains symmetric (hence the free ordering of adjuncts in the lower domain).

4. Conclusion and further issues

In this squib, I argue that the linear order asymmetry cannot be fully reduced to the operation Merge (cf. Kayne 2022). I show that while the syntax in the functional domain is compliant with the LCA type (or the BBC type in Haider 2013) of asymmetric structure, the lexical domain may remain symmetric. I support the claim by examining the basic word orders in the lexical domain between VO and OV, the lexical conjunctions, and the event-internal adverbs. My arguments are listed as follows again: first, VO and OV are globally symmetric, and it is argued that there are inherently VO languages as well as inherently OV languages; second, lexical conjunctions are commutative and can be double-headed, as evidenced in

the *you...you* construction in Chinese; third, event-internal adverbs can be freely permuted, and such symmetry is not observed among functional adverbs.

There are several issues that I am unable to elaborate on in this squib but are nevertheless worthy of further investigation. One of them concerns the (a) symmetry of labeling and linear order. Thus far, the asymmetry of syntax has been considered from the perspective of linear order, but labeling is generally assumed to be asymmetric given the X-bar schema or the endocentricity of Merge (if X and Y merge, either X or Y projects). The asymmetric view of labeling has changed, however, since the postulation of the Labeling Algorithms (Chomsky 2013, 2020), which proposes that labels can come from agreement (minimal search of matching feature) after Merge takes place. For example, subject raising to TP projects a label [ϕ], and *wh*-movement to the CP projects a label [Q] (for the LF-interpretation). The consequences of such mechanisms with respect to the (a)symmetry of syntax are explored by Narita and Fukui (2022). They claim that the internal Merge creates a symmetric label through feature sharing, while the external Merge creates an asymmetric label. They further argue that the former generally occurs in the functional structure (at least for the Spec positions), while the latter in the lexical argument structure, a proposal reminiscent of the Duality of Semantics in Chomsky 2021. If their proposal is on the right track, then the universal asymmetric ordering (in the sense of LCA) is encoded in the internal Merge (mostly in the functional domain with a symmetric label), while the external Merge (mostly in the lexical domain with an asymmetric label) would create a symmetric structure that still relies on the directionality parameter to determine the word order. Their proposal thus suggests a trade-off of (a)symmetry between linear ordering and labeling.

Another issue involves the Final-Over-Final Condition, or the FOFC (see Sheehan et al. 2017 and the references therein), which states that a head-final structure can only dominate a head-final one, yet a head-initial structure can dominate either a head-initial structure or a head-final one. In our conception, the FAH argues that the functional domain is predominantly head-initial, and the lexical domain can either be head-initial or head-final. Since the functional structure dominates the lexical one, the prediction of FAH seems compatible with the FOFC, but the FAH also rules out the head-final structure in the functional domain. The FAH predicts that only the lexical head can be head-final. At first sight, this prediction seems to be too strong because it seems that we can find head-final functional head in languages. However, under close scrutiny, such a prediction seems to be on the right track. Two relevant cases are considered here: modals in German and final complementizers in the Dravidian languages.⁸ Modals in German

⁸ There are other head-final structures in the functional domain, such as head-final complementizers in SOV languages (such as Japanese and Korean) and sentence-final particles in Chinese. These structures are generally considered head-final CPs. The question is whether they are underlyingly head-final. While the issue is far too complicated for us to deal with here, it is argued in Kayne 2003 that the apparent head-final C in Japanese involves (remnant) movement, so that C is underlyingly head-initial and only becomes head-final due to IP-raising. In a similar vein, Pan (2022) proposes that

can follow the main verb on the surface structure (in a head-final configuration), so it appears to be a head-final functional head dominating the VP:

- (18) Er glaubt, dass Johann das Haus verkaufen wird.
 he says that Johann the house sell will
 ‘He says that John will sell the house.’
 (Simpson 2022: 581, citing Grewendorf 1998)

However, Abraham (2020) has shown that modals in German in fact behave more like full lexical verbs (they can be inflected for mood and tense, and can be used independently without a lexical verb, etc.). Therefore, what we see in German is actually a head-final lexical (modal) verb dominating another head-final lexical verb. As for clause-final complementizers in the Dravidian languages, Bayer (1999) argues that they are mostly derived from lexical *say*-verbs (while head-initial Cs in these languages are not). In this sense, we can follow Haider (2013: 69) in distinguishing the “lexical” functional head (which has a lexical specification of directionality and can be either head-initial or head-final) from other functional heads (which are head-initial by principles of Universal Grammar (UG)).

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sentence-final particle is derived through IP-raising (see also Simpson and Wu 2002). Therefore, head-final functional heads are only apparent, which addresses Kayne’s question of why there is no mirrored V-2 languages.

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從非對稱性中找到對稱：評論 Kayne (2022)

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提要

Kayne (2022) 指出句法結構的不對稱性肇因於最基本的合併 (Merge) 操作。此篇短文重新檢驗其提出的看法與證據。有別於 Kayne，我們假設句法中的不對稱型態主要分布在功能結構的範疇內；反之，在詞義結構的範疇裡，我們仍然能觀察到句法的對稱型態，此對稱型態可以是單一語言內部的現象，也可以是跨語言的現象。我們提出三個證據來支持此功能不對稱假設：首先是跨語言中 VO 跟 OV 的分布對稱性，其次是詞義範疇中連接詞（例如“兼”跟“又……又”結構）所呈現出來的交換性，最後是在詞義範疇中，修飾語的自由分布性。如果我們提出的觀察與假設是正確的，那麼句法的不對稱性就不能完全歸屬於合併操作的不對稱性。

關鍵詞

句法不對稱性，語序，線性關係，功能範疇

