A null theory of scrambling

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Abstract

Grammars are decomposable systems. An explanatorily adequate characterization of a given utterance factorizes the contributions of each of the subsystems on the one hand, and on the other hand, it reduces its apparent complexity to the interaction of less complex subsystems. Scrambling is an excellent show case. Its complex properties are not inherent properties of a construction but the result of the interaction of phrase structuring with other subsystems of grammar, and in particular with the information-structuring (IS) subsystem of pragmatics.

If – as practiced by Generative Grammar – syntactic structures are modelled as products of an abstract sequential construction process, the sequence of steps in the derivation scenario is viewed in a quasi-deterministic cause & effect perspective. Such a perspective is highly misleading, however. It is bound to fail when syntax provides options that are utilized by other subsystems. This happens when the structure system interacts with semantics, prosody, or pragmatics. In this case, the Generative modelling strategy seeks syntactic triggers where there are none.

Germanic and Slavic languages are handy testimonies for rejecting a strict trigger scenario, not only for scrambling but for filler-gap constructions in general. Neither 'movement' to Spec-C, nor 'movement' to Spec-T, nor Scrambling is a matter of syntactical determinism. Fronting and Scrambling are structural options provided by syntax. These options are subsequently utilized by other subsystems of grammar. These modules, however, do not trigger structural configurations, they merely exploit them. If a grammar provides alternative structural options, these options are just utilized. From a syntax-only stance, they may appear as if syntactically triggered.

1. Introduction

Scrambling is an apt showcase for demonstrating the interaction between the cross-linguistic availability of various structural degrees of freedom on the one hand and their independent utilizations in different contexts on the other hand. These contexts are independent and so it is not surprising that the long-lasting search for unique and unequivocal triggers of scrambling has not proven successful. Here is a *non-exhaustive* sample of typical instances of scrambling in German.

(1) a. Man hat [jedes^i Auto]$_j$ sofort seinem^i neuen Besitzer --$_j$ übergeben.   *Q-Binding*
one has [each car] immediately (to) its new owner consigned

   b. Man hat die Übersetzungen^i_j einander^i --$_j$ angeglichen.   *A-Binding*
one has the translations (to) each-other adjusted

   c. Er hat [mindestens eine Frage]$_j$ jedem Prüfling --$_j$ gestellt.   *Q-Scope*
he has [at-least one question] every candidate asked

   d. Heute regiert das Land$_j$ eine korrupte Clique --$_j$.   *IS (given vs. focus)*
today governs the country a corrupt clique

   e. Da hat die Bibel$_j$ vielleicht jemand --$_j$ missverstanden.   *IS (definiteness)*
there has the bible perhaps somebody misunderstood

f. Den Mann hat *der Schlag getroffen* / *der Teufel geritten* / *der Hafer* gestochen/ ...
   the man$_{Acc}$ has the stroke$_{Nom}$ hit[1] / ... the devil$_{Nom}$ ridden / the oats pricked/ ...

In (1a,b), the scrambling pattern provides the c-command relation between binder and bindee. In (1c), the scrambled position of one of the quantified expressions *disambiguates* the scopal relation. The scrambled order conveys the information that the base order is dispreferred. So, the scrambling pattern is a way of disambiguating. In a language like English, if there is no alternative formulation[2] available, the utterance corresponding to (1c) has to be – ambiguously[3] – interpreted in its base order.

If (1d) is used as an answer to a questioned subject, scrambling appears to apply 'altruistically'. As an answer, (1d) provides a serialization with the subject in the clause final area, which is the preferred area of focus-placement and therefore also for placing the question-answer focus. The items that count as 'given' precede it. The scrambling pattern is perfect since it matches the IS-preferred partitioning of an utterance in given vs. new or background vs. focus areas. This is not the effect of "anti-focus" (Molnárfi 2004) as a suspected trigger of scrambling. It is merely the selection of one of the available syntactic structures that match IS conditions.

(1e) is the same kind of example as (1d), but in Lenerz (1977), for instance, it was described as geared by 'definiteness'. Definiteness is only the symptom, not the trigger. It is typically corre-lated with *given* (vs. *new*) information. IS considerations prefer *given* to precede *new*. So, it reduces to a serialization preference in terms of information structuring. This is pragmatics, not syntax. The scrambled pattern happens to be congruent with the partitioning of the clause by IS-based preferences, and hence it is utilized.

(1e) is instructive for yet another reason. The reading for the scrambled version (1e) is identical with the reading for the version without scrambling, *provided* the sentence accent is placed on the verb and not on the object in its base position, which would be the default accent. In a written version of (1e), this is guaranteed by resorting to the scrambling pattern. In the scram-bled version, the base-position of the object is empty and trivially unstressed. Hence the verbal head as the only item in the deepest position receives nuclear stress. Syntacticians typically rely on written material rather than on sound files. Therefore, such circumstances matter.

(1f), eventually, illustrates a phenomenon that is absent in strict SVO languages (Haider 1993: 173; 2013: 54). In such languages, idiom formation cannot join the verb and the subject while sparing the object as the referentially free constituent. The reason is that in SVO languages, there is an obligatory subject position outside of and preceding the verbal phrase while the object is VP internal. So, an idiomatic sub-constituent that contains the subject and the verb necessarily contains the object. If in an SVO language, the subject and the verb are parts of an idiom, then the whole VP is part of the idiom and the object cannot be spared. In OV languages, scrambling is a way of forming a sub-constituent that only contains the subject and the adjacent

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[1] i. "Diesen Mann$_{Acc}$ hat der Schlag getroffen" = This man has suffered a (brain- or heart) stroke;
   ii. "Diesen Mann$_{Ass}$ hat der Teufel geritten." = This man has taken leave of his senses.
   iii. "Diesen Mann sticht der Hafer"   = This man behaves boisterously.
[2] E.g. the dative-shift variant of a verb, in place of a double-object construction. News corpus : [...] *"are prepared to hand over every square centimeter of land back to its traditional owners."*
[3] i. "asked every examinee at least one question"
Richard Montague's example of scopal ambiguity is well-remembered: "*Every man loves a woman*." English can-not disambiguate by simple word order change because its syntax does not provide the means.

verb. The object is not part of this sub-constituent and can be freely lexicalized while the sub-constituent is treated as the idiomatic part.

What this brief exposition should illustrate is the multi-purpose utility of scrambling patterns in a modular perspective on grammar. Scrambling is not *syntactically* triggered by any one of these grammatical requirements. The syntactically available patterns are utilized by other modules of grammar as a decomposable system. A language whose syntax does not provide such options cannot utilize them, trivially. The potential utility has not lead to grammar changes in such languages. In other words: Scrambling is *not* a *construction* that is available in one language and not in the other. It is a syntactic system potential. It is a property of constituent structure, as will be explicated in the following section.

2. When inappropriate modelling leads to a dead end

In main-stream Generative grammar (Minimalist Program), it is easy and popular to *syntactify* inter-modular properties instead of modelling them. In the absence of a feature theory, anyone is free to imagine features of any kind and declare them as triggering devices. Such a feature allegedly needs to be "checked" at some higher Spec-position. A "scope feature" (Hinterhölzl 2013: 183), for instance, is deemed to make a scope-bearing item move to a c-commanding position where its feature gets checked. As a purported explanation, this is as enlightening as the assumption that checking a "gravitation feature" is the explanation for the fact that the glass in my hand drops to the floor if I let it go. In fact, this is Aristotelian syntax. In Aristotle's physics, bodies have an urge to move to their *natural* destinations. In other words, they need to check their 'destination' features. For heavy bodies, the respective d-feature is checked below, for light ones this happens above.

When grammarians syntactify *pragmatic* properties (viz. information structure properties) as alleged triggers of *syntactic* structuring, they are apparently not aware of their essentially *functionalist* approach. Anyone who does so has unconsciously converted from a structuralist to a functionalist. However, it is not the *function* of scrambling to satisfy information structure preferences or the needs of any other subcomponents. Information structure preferences only *utilize* the available grammatical potential. The *syntactical* potential is nothing but the availability of alternative positions[4] in a given phrase structure. Other modules utilize the structure that is appropriate for them. There is no *syntactic* determinism. As for determinism, such a choice situation is not specific to scrambling. The same situation holds for other types of 'movement' configurations, and notably for A- as well as A'-movement contexts, as will be briefly argued below.

The two fundamental drawbacks of the Generative-Grammar model are the theorem-proving approach to grammatical well-formedness and the outdated computational model which it is implemented in. The computational model dates back to the fifties. It is a sequential input-output algorithm. Today, computer science as well neuro-cognitive modelling convinced us

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[4] The alternative positions are not pre-specified either, unlike what "Cartographic syntax" suggests. Syntactic cartography is but a restatement of usage-based properties, in a technical and circular way. [s. Struckmeier (2016: 382), (2017: 9) and the literature cited there]. A cartographic representation is the *structural encoding* of the *pragmatic tuning* of a clause. The properties it ascribes to structure are mere superposition effects of modules that meet and interact. The cross-linguistic complexity is the complexity of various interacting principles, but not the superposition of the aggregate of any functionally equivalent structures encountered in any odd language.

that computing in general, and neuro-cognitive computing in particular, works in highly distributed and massive parallel ways. The properties of subcomponents become effective in superposition rather than in sequence. It is very improbable that the appropriate model of our human grammar capacity is a sequential *calculus* that starts with atomic units ('numeration') and terminates after a finite number of steps, with "SF" (= semantic form) as its output. When a derivation comes to its end, this amounts to the *proof* that the string of terminals corresponds to a well-formed sentence. The sentence has been derived as a theorem of the grammar calculus. If a sentence is not well-formed, the derivation "crashes". In other words, such a sentence cannot be derived as a theorem of the system. This view, as described in the previous sentences, is disconnected from, and ignored by cognitive science.[5] It is grammatical metaphysics.

Our brains are poor theorem provers, but highly efficient pattern detectors. Evolution has optimized our brain for pattern detection and pattern matching, but not for the sequential computation of cascaded algebraic structures.[6] Scrambling is a demonstration case. Generative Grammar defines grammatical well-formedness *algebraically*, that is, as the result of a series of derivational steps. An array of terminals is characterized as a well-formed sentence if it can be derived by the grammar algorithm; otherwise it is ungrammatical. Our brain, however, works *'topologically'*. It matches patterns. The difference is easy to expound by reference to chess.

A given configuration of pieces on a chess board can be represented in two entirely different ways. The topological way is to describe the position of each of the chess pieces in terms of a template (or coordinates). The algebraic description is the specification of the series of moves that lead to the particular configuration. 'Topologically', an array of terminal elements is a well-formed sentence if there is a well-formed sentence structure that fully covers the given array. In other words, a serialization is well-formed if it matches the serialization of the terminal positions of a well-formed clause structure pattern. This is the topological view. The generative view specifies the *series of moves* that finally terminate in the given serialization of terminals.

With respect to scrambling, the topological part is the syntactic one. Some types of phrase-structures are more 'flexible' than others, as will be made precise below. Flexibility means that in some languages, there is variation among structure templates. This variation space can be partitioned by interacting modules when a module attaches some of its properties to some structures but not to others. Someone who thinks only in syntactic categories and neglects the contributions of the interacting modules is misled to assume that syntactic principles are semantically or pragmatically governed. The algebraic machinery appears to be geared by semantic, pragmatic, or prosodic properties. This neglects that the systems involved are in superposition, not in sequence.

The triggering view is too simple and obviously misleading. This is not the way science models complex systems. Sciences decomposes systems; see Simon (1962), on "nearly decomposable" systems. In established fields, the complex appearance of reality is modelled as the result of the

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[5] *"Unfortunately, to our knowledge, no experimental evidence has been offered to date that suggests that merge and move are real (in the same sense that the spatial frequency channels in human vision are)."* (Edelman & Christiansen 2003:61).

[6] Kidd & Arciuli (2016) found that children who were better at identifying patterns in non-verbal tasks also had a better command of grammar. They had tested two syntactic structures that show considerable variability in the examined age range, namely passive and object relative clauses. In both cases, the topological identification of the grammatical subject in an SVO language such as English is crucial for mastering these constructions.

interaction of less complex subsystems. Interacting subsystems of grammar that are relevant for scrambling phenomena comprise phrase structuring on the one hand and pragmatics (information structuring), semantics (binding), prosody (focus), and others.

Whenever there is more than one option for a well-formed structure, a deterministic account in terms of triggering is in trouble. Syntactic 'movement' phenomena typically allow for choices. As for A'-movement, it is a well-known fact of German – which is representative of V2-languages in this respect – that in the main clause version (2a) of an example such as (2b), the clause-initial position can be filled by any one of the five underlined expressions. An additional option is waiving any fronting. Instead, the obligatory structural position can be 'plugged' with a syntactic dummy, namely the expletive item '*es*'[7] (it/there).

(2) a. [...] werden <u>in Zukunft</u> <u>vielleicht</u> doch noch <u>weitere Saurierreste</u> <u>auf Mallorca</u> <u>gefunden.</u>
          are   in future   perhaps   yet still further saurian-remnants at M. found
   b. dass in Zukunft vielleicht doch noch weitere Saurierreste auf Mallorca gefunden werden

The actual choice of the clause initial item may be guided by preferences of information structuring, but this is a pragmatic and not a syntactic issue. Pragmatic preferences utilize syntactic options but cannot compel syntax to provide them. The actual choice of the particular constituent for lexicalizing the clause-initial position of Germanic V2-declaratives is not triggered syntactically. This insight[8] has been grasped and published already in the 19th century, by Erdmann (1886:183).

At this point, an informed reader will feel tempted to object. In wh-interrogatives, a wh-phrase *must* be fronted in order to derive an interrogative clause in German, for instance. This is true (but the wording is accurate only if one believes in 'movement') and it is fully compatible with a non-deterministic choice-scenario. The grammatical principle that characterizes an interrogative clause with reference to the clause-initial spec-position, does not 'select' or 'attract' a wh-item. It merely defines the property of a wh-clause. Anyone uttering a wh-clause will have to activate the appropriate pattern with a wh-item in the top spec position. In case there is only a single option, the choice appears to be forced. Let us have a look at some details (3).

(3) a. Gestern hat *wen was* schockiert.
        yesterday has whom what shocked ('Yesterday, something has shocked someone')
   b. *Wen* hat gestern *was* schockiert?   (ambiguous w.r.t. *was*: interrogative or indefinite)
      whom has what shocked
   c. *Was* hat gestern *wen* schockiert?   (ambiguous w.r.t. *wen*: interrogative or indefinite)
      what has yesterday whom shocked

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[7] In contrast to SVO-languages such as English, and contrary to empirically incorrect claims in the literature, German does not display a definiteness effect for clauses introduced by the expletive '*es*'. English 'there' is a subject expletive, but German '*es*' is a Spec-C expletive. It is easy to locate corpus data like the following ones:
i. *Es* hat ja *der* Finanzminister darauf hingedeutet, dass Kosten für die Forstverwaltung nicht entstehen dürfen.
ii. Es hat auch *der* enge Längskanal des Stieles eine kreisrunde Form.
iii. Es soll ja *die* Haftung der Automobilbesitzer in einer ganz eklatanten Weise verschärft werden.
[8] "*Enthält ein Satz mehrere Bestandteile, so steht vor dem Verbum immer nur einer.*" (If a sentence contains several parts, then only a single one occurs in front of the verb.) "*Durchaus unrichtig ist es, wenn einige Grammatiker hier dem Subjektsnominativ besonderen Anspruch auf die erste Stelle einräumen wollen.*" (It is entirely incorrect if some grammarians concede a special privilege to the subject nominative for the first position).

In (3a), the wh-pronouns are interpreted as indefinite pronouns. The interrogative interpretation is generally restricted to wh-pronouns in spec-positions and to wh-pronouns in-situ provided they are bound by a wh-pronoun in a spec-position. In fact, a bare wh-pronoun in a spec-position *must* be interpreted as an interrogative item rather than an indefinite pronoun. In other words, (3b) and (3c) cannot be interpreted as declarative clauses. So, there seems to be no choice. Is this a trigger situation? It is, if syntax is construed as a particular generative algorithm. It is not a trigger if syntax is understood as a structure projection system. What syntax contributes is this: It characterizes the structural position of the wh-pronoun. Then semantics takes over. If the wh-pronoun is in a spec-position, it is interpreted as a wh-operator; if it is not, it is interpreted as an indefinite pronoun, unless it is bound by an interrogatively interpreted wh-item.[9] Sentences introduced by a wh-operator count as interrogative clauses and are interpreted as questions.

The impression of syntactic triggering arises whenever there is only a single wh-item that could be fronted. A single item does not leave room for a choice. In (3), there are two candidates, and each one is a good choice for the clause-initial position (3b,c). (3) is a typical example set of an SOV language.

In SVO languages, the situation is complicated by the fact that the obligatory subject position in the [S[VO]][10] clause structure is a spec-position. Wh-items in spec-positions qualify as operators and resist being bound. So, a subject wh-pronoun does not tolerate being bound. Consequently, (3b) is ungrammatical in English. For a detailed exposition of the grammatical intricacies of wh-subjects in situ in SVO, please consult Haider (2010 ch. 3). This problem does not arise in SOV languages. The arguments of the verbal head – objects as well as the subject – remain in their base positions in the verb phrase. But even English provides choices for multiple wh-constructions, once one abstracts away from the special conditions that apply to the subject position of SVO languages:

(4) a. *When* did he publish *what*? – *What* did he publish *when*?

   b. *When* did he show up *where*? – *Where* did he show up *when*?

What English shows is this. The choice between alternatives may be narrowed down by grammatical restrictions on the elements involved. The limiting case is a context in which there is just a single option left.[11] This context may be mistaken for a triggering situation: "*This item has to move in order to ...*". The simpler formulation is this: Such items are ungrammatical in-situ. Here is such a context:

(5) a. It is unclear, *why* he contacted *whom*.

   b. It is unclear whom he therefore/*why contacted

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[9] The in-situ item in (i) may be bound either by the matrix wh-item or the local one, whence its ambiguity. Co-indexation denotes the binder-bindee relation between the pronouns:

 i. Wie[i] kann ich herausfinden, wann[j] er wen[i/j] angerufen hat.
    how can I   find-out   when he whom phoned   has

[10] This notation is used in order to emphasize that the relevant property for identifying a language as "SVO" is the particular clause structure and not merely the preferred order of *subject-verb-object* in a minimal clause consisting only of the verb, the subject and the direct object. Such orders are structurally ambiguous and therefore a misleading criterion. Typologists in the Greenbergian tradition stick to the order property and misclassify Slavic and Germanic SOV languages as SVO. The resulting set of languages is typologically inconsistent.

[11] For any pairing of *'how'*, *'why'* and a wh-subject in a simple English clause, there exists no well-formed configuration at all: "*Who objected why*?" The ersatz is bi-clausal: "*Who objected, and why (did they do so)*?"

c. It is unclear whom he contacted therefore/*why

In English, and in SVO-languages like English, but not in SOV languages, *'why'* and *'how'* are ungrammatical in any available *in-situ* position (5b,c); for an explanation see Haider (2010: 117). So, the only option is fronting. In OV-languages, however, there is no such restriction and hence there is a choice:

(6) a. Es ist unklar, *weshalb* er *wen* kontaktiert hat.

  it is unclear why he whom contacted has

  b. Es ist unklar, *wen* er *weshalb* kontaktiert hat.

As for *A-movement* configurations, a particularly instructive case of a choice situation is the Norwegian passive (Taraldsen 1979:49; Lødrup 1991:127). This language and others demonstrate how the full grammatical potential is tapped when it comes to filling the obligatory structural subject position of an [S[VO]] clause structure. A potential filler for the subject position is, as expected, the direct object turned into a derived subject (7a). In (7b), the so-called pseudo-passive, the complement of the prepositional object is fronted to the subject position *despite* the presence of a direct object. Eventually, in (7c), the subject position is filled with a dummy subject although there would be candidates for filling the syntactic subject position available. Finally, (7d) is the only unacceptable option since the subject position would remain empty. These patterns are identical for main clauses as well as embedded ones.

(7) a. (at) frimerker ble klistret på brevet.   Norwegian

    (that) stamps were pasted on letter$_{DEF}$

  b. (at) brevet ble klistret *noen frimerker* på.

    (that) letter$_{DEF}$ was pasted some stamps on

  c. (at) *det* ble klistret frimerker på brevet.

    (that) EXPL was pasted stamps on letter$_{DEF.}$

  d.*(at) ble klistret frimerker på brevet.

Obviously, there is no deterministic grammatical trigger. Either a suitable item is fronted to the subject position or a dummy is used to lexicalize it instead. The alternatively available option of fronting either the direct object or the PP-internal noun phrase demonstrates that deterministic scenarios in terms of feature checking and minimal links along the lines of the Minimalist Program are too simplistic and in need of revision. Even English displays the same phenomenon to a much larger extent than it is generally acknowledged.[12] Bolinger (1975:65) adduces examples like the following ones in which a PP-contained noun phrase is fronted across a direct object in a passive construction. In his words "*the only real restrictions are clarity and intent*".

(8) a. That city$_i$ has been fought *many a battle* over --$_i$.

  b. He$_i$ has been burned, stuck *pins* in --$_i$, beheaded – all in effigy, of course.

  c. (PRO$_i$) to be whispered *such dirty innuendos* about –$_i$ was enough to break any girl's heart.

  d. (This tool has never been used for its main purpose) *It*$_i$'s never been done *anything* with --$_i$ at all.[13]

It is evident that the familiar narrative of generative grammar and LFG w.r.t. pseudo-passives fails in Norwegian as well as in English (8). In an *intransitive* pseudo-passive construction, the

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[12] In English, idioms such as "*take advantage of*" or "*keep tabs at*" are usually cited as examples for the same kind of alternation: *She was taken unfair advantage of. – Unfair advantage was taken of her.*

[13] "*The rooms cannot have* been done anything with *since it was built.*" (source: Trip Advisor)

verb is said to incorporate the preposition and to thereby turn the complement of the preposition into a (derived) object of V+P. This would evidently not work in the *transitive* contexts of (8). Incorporation of the preposition could neither apply in (8) nor in (7b), but nevertheless there is a choice between fronting the direct object or stranding the preposition in the English examples and there is a free choice in Norwegian generally. The trigger scenario suggested in the standard analysis of NP-movement in passive in terms of case 'absorption' and obligatory A-moved direct objects is empirically contradicted by Norwegian and other languages.

3. Scambling – a predictable epiphenomenon of phrase structuring

Scrambling is a system potential of particular phrase-structure configurations. The structural patterns we look at when we look at instances of scrambling are head-*final* phrases or phrases with *unspecified* directionality of the head of the phrase (see Haider & Rosengren 1998, 2003). The existences of the latter type, the "third type" or "T3" (Haider 2010:162; 2013:131, 2015) tends to be overlooked because the Greenbergian types are viewed as an exhaustive set of types. T3-languages are usually misclassified as SVO languages with an exceptional property, viz. exceptionally 'free' word order.

In Generative grammar, a proper understanding of scrambling as the reflex of an *independent* system potential of certain phrase structures is inaccessible since scrambling is modelled as movement to higher spec-positions.[14] Spec-positions are not type-specific. They ought to be available in any language, that is, in SVO languages just as well as in SOV language, contrary to the facts. Strict and unquestionable SVO languages do not scramble. Alleged SVO languages with scrambling – upon closer scrutiny – turn out to be T3 languages that are misclassified as SVO.

The crucial *syntactic* question is this: What is the essential syntactic difference between a scrambling and non-scrambling phrase structure setting? The current answer under a generative perspective is circular: Scrambling languages provide the necessary functional spec positions and non-scrambling languages don't. Such an 'explanation' is not satisfactory. It is merely camouflaging the problem by a technical jargon. The question still remains why precisely SOV (and type III) languages would provide these structures, but unquestionable [S[VO]] languages would not.

Moreover, the question usually focuses on too narrow a set of data. Scrambling is not a sentence-level property; it is a phenomenon of the phrasal level. Since the VP is the base constituent of a clause, its phrase level properties can easily be mistaken for sentence level properties.[15] German is a handy demonstration case since it is head-final for VP and APs, but head-initial for NPs and PPs. In addition, any verb can be converted into a noun. This guarantees minimal pair patterns such as in (9). VPs (9a,b) and APs show order variation, NPs (9c,d) and PPs don't.

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[14] If this assumption is seriously put to test, nobody can overlook (but only suppress) that scrambled items do not have the syntactic properties of phrases in preverbal spec-positions. They remain transparent for extractions, which no phrase in a preverbal spec position does (Haider 2010: 155-157):

i. Was$_i$ hat [damit --$_i$ zu beweisen] der Schreiber dieser Zeilen denn schon vor Jahrzehnten versucht?
  what has [with-it to prove] the writer of these lines well already before decades tried

[15] The strict locality property of scrambling (as opposed to the non-local kind of fronting) is a trivial consequence of the phrase-internal nature of the phenomenon.

(9) a. [gesunden Menschen gefährliche Medikamente verabreichen]$_{VP}$ base order
     healthy people$_{Dat}$ dangerous drugs$_{Acc}$ administer$_{V°Inf.}$

   b. [gefährliche Medikamente gesunden Menschen verabreichen]$_{VP}$ scrambled order

   c. das [Verabreichen gefährlicher Medikamente an gesunde Menschen]$_{NP}$ base order
     the administer$_{V°Inf=N°}$ dangerous drugs$_{Gen.}$ to healthy people
     'the administering of dangerous drugs to healthy people

   d.*das [Verabreichen an gesunde Menschen gefährlicher Medikamente]$_{NP}$ scrambled order

In a VP, the serialization is variable (9a,b), in the NP it is not (9c,d). The NP patterns are identical with the patterns of English NPs or VPs: The serialization is strict, and the nominal object is immediately adjacent to the head. No adjunct may intervene, not item may be scrambled. Generative discussions of scrambling remain silent on scrambling in non-clausal domains. The structure of noun phrases is incompatible with the structural expenditures envisaged on the clause-level but nevertheless, head-*final* NPs admit scrambling. Urdu, for instance, is a strictly head-*final* language and its NP-internal arguments scramble (Raza & Ahmed 2011).

Once it is acknowledged that scrambling is not a clause-level phenomenon, it is much easier to understand and capture the clear-cut typological contrast between languages with and without scrambling. Scrambling patterns are a system potential that follows from the licensing conditions which hold between the head of a phrase and its phrase mates; see Haider (1992a, 2013: 3-4, 11-12, sect. 3.5), (2015, sect. 4). The central conditions are as follows:

(10) i.   Phrase-internal projection lines are *right-branching*.[16]

   ii.   A dependent phrase is licensed *directionally* (= in the parametric canonical direction)

   iii.   The position of a dependent phrase P is structurally licensed by the phrasal head h =$_{Def.}$ (a projection of) the phrase head h and P *minimally and mutually c-command* each other.

It is the *minimal & mutual* c-command condition (10 iii) that is directly causal for many of the OV/VO contrasts in phrase structuring. Type-defining properties of [S[VO]] languages, such as the shell-structure of complex phrases, *no scrambling* because of phrasal *compactness*, the left-left condition (Haider 2018), and the obligatory presence of a functional subject position in the [S[VO]] clause structure, with the concomitant syntactic properties of a subject in an obligatory spec position, follow directly from (10), as demonstrated in Haider (2015).

Please note that it is *the very same principle* (viz. universality of merger to the left) and *the very same licensing condition* applied under parametrized directionality that covers the different outcomes. Let us focus on scrambling. Scrambling patterns are patterns with variable order of arguments in a phrase. In head-final phrases (11a), the base position and the re-ordered position of a phrase are positions within the directionality domain of the head. In head-initial phrases (11b), the re-ordered phrase would end up outside of the directionality domain of the head. The arrows in (11) signify the direction of licensing, which, in head-final phrases, is 'to the left'.

(11)   a. [XP $_{\leftarrow}$[YP$_{\leftarrow}$V°]]$_{VP}$ ⇨   [YP$_i$ $_{\leftarrow}$ [XP $_{\leftarrow}$[v' --$_i$$_{\leftarrow}$V°]]$_{VP}$]$_{VP}$ head-final

     b. [XP [v' V°$_{\rightarrow}$ YP]]$_{VP}$ ⇨   [YP$_i$ [$_{VP}$ XP [v'$_{\rightarrow}$ V°$_{\rightarrow}$ --$_i$]]$_{VP\rightarrow}$]$_{VP}$ head-initial

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[16] In the diction of 'merging': external and internal merge is to the left.

A position of an argument within the directionality domain is licensed by the head and therefore counts as A-positon. A position outside of the directionality domain is not licensed by the head. Consequently, the VP-internal subject in a language like English, which precedes the verb, is in need of a directionally licensing head. This is the functional head that selects the VP in SVO languages. In OV languages, the subject is licensed VP-internally, just like any other argument of the verb. There is no functional projection for licensing the subject in an OV verb phrase.

Scrambling does not transgress the licensing domain. In (11a), the scrambled position is a position within the licensing domain of the verbal head. In (11b), however, a scrambled phrase would leave the domain. Hence, strictly head-*initial* phrases are incompatible with scrambling. Let us focus now on Scrambling *within* the directionality domain of a head and on what prevents the pattern (12a) in English but permits the pattern (12b) in German or Dutch.

(12)   a. [send several mails to friends]　　⇨　*[send to friends several mails]
　　　　b. [einige Mails an Freunde schicken]　⇨　[an Freunde einige Mails schicken]

The scrambled pattern in (12a), but not in (12b) violates the minimal & mutual c-command condition (10iii). The scrambled item in (12a) is an illicit intervener that blocks the minimal c-command relation between the licensing verbal head and the licensee. '*Several mails'* is not minimally c-commanded by a licensing head.

In OV (13b), any projection of the verb is a licenser, since any projecting sister node meets the directionality requirement. Hence the minimal & mutual c-command relation is guaranteed in any position within the phrase, preceding the head. In the VO setting, the scrambled variant of (12a) is a special case of (13c). Any intervener π, viz. a scrambled phrase or an adjunct, destroys the minimal c-command relation. This is the reason for the compactness property of head-initial phrases. No adjunct may intervene between the verbal head and its nominal arguments and no phrase can be scrambled to such a position in a head-initial phrase. In head-final phrases, this is not the case, neither empirically not theoretically (13e).

(13)   a. … [send $_{\rightarrow}$ [[*to friends] [several mails [s̶e̶n̶d̶$_{\rightarrow}$ --$_i$]$_{\rightarrow}$]$_{\rightarrow}$]]
　　　　b. … [[an Freunde] $_{\leftarrow}$[[einige Mails] $_{\leftarrow}$[--$_i$ $_{\leftarrow}$schicken]]]
　　　　c. … [send $_{\rightarrow}$ [[π] [several mails [s̶e̶n̶d̶$_{\rightarrow}$ to friends]$_{\rightarrow}$]$_{\rightarrow}$]]
　　　　d. … send (*today) some friends (*hastily) several mails
　　　　e. … an einige Freunden *heute* einige Mails *hastig* verschicken
　　　　　　 to some friends *today* several mails *hastily* send

In German, VPs are head-final, NPs are head-initial. Hence, scrambling is possible in VPs but not in NPs. VPs admit VP-internal adverb positions, but NPs don't (see 9d). The latter property correlates with the former. Phrase-internal scrambling and phrase-internal adjuncts are excluded by the same principle, namely (10iii) in head-initial phrases. This pattern has been wrongly generalized from English to other languages, such a Dutch. This unjustified transfer is the source of the idea of "Dutch scrambling". NPs preceding VP-internal adjuncts are analysed as scrambled merely because in English adjuncts precede a VP and are banned from VP-internal positions. However, this is not a universal property. It is a particular property of head-initial phrases. Dutch does not scramble NPs in clear cases of scrambling, as in (14c), or in double-object constructions such as (14d), and hence it does not scramble across adverbials.

(14) a. dat hij deze mensen(i) *van dichtbij* (--i) heeft mogen leren kennen   Dutch
     that he these people at close-range has wanted get to-know
    b. omdat hij mensen(i) *graag* (--i) helpt bij een gezonde leefstijl
     because he people   gladly   helps with a   healthy lifestyle
    c.*Stoort de buren_i het geluid --i?
     annoys the neighbours the noise
    d.*Toen hebben de autoriteiten het kind_i de moeder --i teruggegeven
      then have the authorities the child the mother back-given

In Dutch, scrambling is limited to arguments that are morphologically uniquely identifiable. This is the case with PP-objects (15), as acknowledged by Dutch standard grammars (e.g. Geerts et al. 1984: 989-990).

(15) a. Toen hebben de autoriteiten het kind aan de moeder teruggegeven
      then have the authorities the child to the mother back-given
    b. Toen hebben de autoriteiten *aan de moeder*_i het kind --i teruggegeven
      then have the authorities to the mother the child back-given

Structures as exemplified by (15b) identify Dutch as a scrambling language, which is what is predicted for a language with a head-final VP. The English counterparts with a scrambled PP would be ungrammatical, as predicted. The lack of case morphology of NPs in Dutch is likely to contribute to the lack of NP scrambling.[17] However, the absence of morphological case distinctions for NPs is compatible with Scrambling, as Bulgarian proves. Slavic languages are notorious for their word order variations, and Bulgarian shares most of them, in the absence of morphological case-marking of NPs. Icelandic on the other hand, as an [S[VO]] language, forbids scrambling, despite its rich case morphology (Dehé 2004:94).

Slavic languages are generally filed as SVO languages. The following section will argue that this categorization is in need of revision. Even if the order Subject>Verb>Object is a frequent order in Slavic languages, these languages do not share the structural architecture of [S[VO]] languages. They are languages of a type of its own. They are languages in which the directionality of the lexical heads of a phrase, and in particular of the VP, is unspecified. So, they are able to license phrases in either direction. This brings about a huge potential for word order variation since it combines with scrambling.

4. Scrambling in Slavic languages

"Anything goes" is – in fewest words – the appropriate characterization of the wealth of word order variations in Slavic declarative clauses: "*Apart from the location of clitics there are virtually no syntactic constraints on the ordering of phrases in main declarative clauses. Thus in each of the Slavic languages all twenty-four possible combinations of a subject, direct object,*

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[17] Although pronouns are distinctively case-marked, they are fronted rarely, nevertheless. Here is an excerpt from a newspaper (Volkskrant 12.10.2017) and a book (N. Neuhaus, Diepe wonden & Sneeuwwitje moet sterven):
i. *omdat hem_i de vuurkracht --i ontbeert*
    because him_Obj. the firepower_Subj. lacks
ii. omdat hem_i niets anders --i te binnen wilde schieten
     because him nothing to mind would come

indirect object and verb occur as grammatical declarative orders." Siewierska & Uhliřová (2010:109).

Since the time when John R. Ross framed the later discussion by coining the term "scrambling", Slavic clauses have been identified as apparent hotspots of reordering a basically English-like clause structure. This approach is missing an essential generalization, however. If Scrambling is such an easily available grammatical option, why are there so many strictly head-initial SVO languages with rigid word order and other recurrent properties that are all absent in Slavic languages? Either Slavic languages are highly exceptional SVO languages or the rigid SVO languages are exceptionally rigid.

In an empirically more adequate model, neither group is exceptional. The English-like languages are languages with uniformly head-initial phrases, plus a VP-external, obligatory, structural subject position. In other words, they are uniformly head-initial languages with an [S[VO]] clause structure. The Slavic languages are not exceptional either. They are well-behaved members of different phrase structure type, namely the "third type" (T3), that is, languages without specified directionality values for the (verbal) head of a phrase.

An immediate consequence is a VP in which the verbal head may appear in any structurally available position (16); see Szucsich & Haider (2015) and & Haider & Szucsich (submitted). One of the available and frequently employed serializations is subject>verb>object. Since this pattern is IS-preferred, it is more frequent than other equally grammatical, that is, well-formed patterns. However, frequency is not a syntactic property. It is a fact about language *use*. Grammars characterize the well-formedness of patterns, irrespective of their frequency. The less frequents ones are as "grammatical" as the more frequent ones. In (16), the T3-compatible projections of a VP are listed in such a way that the partial overlap with serialization patterns of other types is recognizable.

(16) Alternative head-positioning in T3-type VPs

      a. $[XP \ [YP \ V°]]_{VP}$ (= OV-like)
      b. $[V_i° \ [XP \ [--_i \ YP]]]_{VP}$ (= VO-like)
      c. $[XP \ [V° \ YP]]_{VP}$ (= T3-only)

The Polish examples in (17) illustrate the patterns in (16). In all these patterns, the relative order of the three arguments remains constant; it is the verb position that changes. Logically, in a series of three items, there are four possible positions for the fourth one: at the end, at the beginning, and two in-between. This is true for the verb in a finite Slavic main clause with three arguments. A *single* theoretical property – unspecified head-directionality – covers the four empirically attested patterns. In addition, the arguments may 'scramble', that is, change their relative order, just like in OV. V-positioning plus the re-positioning of arguments within the directionality domain of the verb, as it is familiar from head-final structures, cover the other twenty variants. The word order variations in T3 languages, such as the Slavic languages, are a combination of the scrambling options of OV languages with the V-positioning options of T3 languages.

(17) a. (że) Marek Ewie kwiaty $_{←}$*dał.*   SOV-like
       (that) Marek$_{Nom}$ Eve$_{Dat}$ flowers$_{Acc}$ *gave*
     b. (że) Marek $_{←}$*dał*$_{→}$Ewie kwiaty.   SVO-like

    c. (że) *dał→* Marek Ewie kwiaty.   VSO-like

    d. (że) Marek Ewie *←dał→* kwiaty.   T3 only

In an [S[VO]]-based analysis, (17b) is assumed to be closest to the base structure. In (17a), the two objects are deemed to be scrambled (to functional spec positions). In (17d), only the indirect object would count as scrambled. (17c) cannot be derived from (17b) by scrambling. So, V-fronting is added to the analysis kit. Unfortunately for the proponents, independent evidence for these derivations is missing. The preverbal objects in (17a) and (17d) have not, and cannot, be shown to have the predictable properties of arguments in spec positions. Here is a core prediction that goes back to the intensive research on conditions on extraction domains. In SVO languages, any phrase above the VP level is inaccessible for filler-gap structures that terminate inside such phrases. In other words, a phrase in such a positions blocks any extraction. This is neither true for the preverbal objects in (17a,d) nor for the subject in Slavic languages. (18) is a well-known construction that is absent in any unquestionable SVO language, namely 'left-branch' extraction:

(18) a. Jaki$_i$ Jarek   [--$_i$ samochód] kupił swojej żonie?   Polish
       which$_i$ Jarek   [--$_i$ car] bought his wife

    b. Koju$_i$ Petar   [--$_i$ knjigu] daje svojoj ženi?   B/C/S
       which$_i$ Petar   [--$_i$ book] gives his wife

    a. Kakuju$_i$ Ivan   [--$_i$ mašinu] *kupil* svoej žene?   Russian
       which$_i$ Ivan   [--$_i$ car] *bought* his wife

    b. Japonskuju$_i$ Ivan [--$_i$ mašinu] *kupil* svoej žene.
       Japanese$_i$ Ivan [--$_i$ car] *bought* his wife

In each example in (18), the gap-containing phrase is preverbal. Nevertheless, each construction is acceptable, given an appropriate context for the information structure effect of the particular word order with a preverbal object. The respective grammars of these languages do not rule out such a construction, the reason being that the noun phrase that contains the gap is within the directionality domain of the verb, *and* that the attribute phrase is in the directionality domain of the nominal head. Hence, the syntactic conditions for filler-gap dependencies are fulfilled.

In English neither the preverbal noun phrase itself nor its attribute would be within the directionality domain of a phrase-internal head. In German, it is the attribute that is not in the directionality domain of the head-noun. This is the syntactic reason of the restriction that J. R. Ross had dubbed "left-branch constraint". Left branches of VPs are easily fronted in German.

Here are two additional facts out of the set of derivable predictions that correctly describe Slavic grammars once they are filed as grammars of T3 rather than SVO languages (Haider & Szucsich submitted, Szucsich & Haider 2015). The first fact is the obligatoriness of a structural subject position in SVO languages. The second fact is a fact about adjuncts that immediately precede a head-initial phrase, viz. the *Left-Left constraint* (LLC).

The mandatory VP-external, structural subject position in [S[VO]] languages is a particularly unerring indicator of an [S[VO]] status of clause structure. In the absence of a subject argument, this position must be lexicalized by a dummy. In OV languages, there is no VP-external structural position for a subject attestable, available, or required, since any argument of the verb is within the directionality domain of the verbal head (Haider 2019).

The ultimate test case for [S[VO]] is the mandatory presence of an expletive subject in an otherwise subjectless sentence. The passive of an intransitive verb is the locus classicus. Passive deprives (intransitive) verbs of their would-be-subject argument. In the case of intransitives, the resulting construction becomes subjectless. An expletive lexicalizes the obligatory subject position in the [S[VO]] clause structure. This is the *expletive subject* known from SVO languages such as the Scandinavian languages (19a) or French (19b,c). English is the only Germanic language in which intransitive verbs cannot be passivized, since there is no available expletive because neither *'it'* nor *'there'* can serve as expletives, see (Haider submitted).[18]

(19) a. (at) *Der* blevet danset   Danish (Vikner 1995: 209)
      (that) *There* was danced

    b. *Il* a beaucoup été fumé dans cette salle   Gaatone (1998: 124)
      it has much been smoked in this room

    c. *Il* a été dormi dans ce lit   Rivière (1981: 42)
      it has been slept in this bed

Romance languages are particularly instructive in this respect. Intransitive verbs cannot be passivized in any Romance null-subject (standard) language in the standard passive construction, that is, participle plus auxiliary. The grammatical reason behind this exceptionless cross-Romance property is simple. The counterpart of the pronominal subject expletive of French would be null in the null-subject languages. Italian (20a) and Spanish (20b) are representative in this respect of any Romance null-subject standard language. Intransitive verbs cannot be passivized because the is no expletive available. These languages are demonstrations of the non-existence of "null expletives". A null-subject language with a pronominal expletive would 'realize' the expletive as a 'null expletive'. If such an oxymoronic concept[19] existed, it would predictably have to be employed in null-subject languages, but it doesn't.

(20) a.* È stato dormito in questo letto   Italian
      has been slept well in this bed

    b. *Fue trabajado duro aquí.   Spanish
      was worked hard here

In a nutshell, what these data show is as follows. If, in a given language, intransitive verbs can be passivized in the absence of a lexical subject expletive, the language is definitely not an [S[VO]] language. This is true for null-subject languages as well as for languages without this property. In [S[VO]] languages, the VP-external, structural subject position must not be radically empty. If there is no filler available, this mandatory position must be plugged with an

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[18] *It/*There has been applauded/coughed/feasted/laughed/... – *dass applaudiert/gehustet/gefeiert/gelacht wurde*
'It' is associated with an extraposed clause, and *'there'* is associated with a postverbal subject argument of a verb.
[19] The concept is oxymoronic since a "null expletive" aka "empty expletive" is something *empty* used for filling a position that must not remain *empty*. The idea originated as an auxiliary hypothesis against evidence from non-SVO-languages (Dutch, German), which falsifies the alleged EPP-universal (= Every clause has a subject):
i. *dass heute nicht gearbeitet wurde* (Ge.) – *Dat vandaag niet werd gewonnen lag niet alleen aan het veld.* (Du.)
   that today not worked was   that today not was won was-due not solely to the field

expletive. A silent expletive would be irrecoverable. Hence null-subject languages cannot employ pronominal expletives.[20] The expletive would fall victim to the null subject property.

Grewendorf (1990: 210) contested the above claim, that had first been posted in Haider (1987), by referring to the fact that Russian clauses with passivized intransitive verbs (21) do not feature an expletive subject. This is so, indeed, but it does not demonstrate at all that Russian is a testimony for null expletives. What Russian is a testimony for is the fact that Slavic languages are not [S[VO]] and therefore do not have to lexicalise an obligatory subject position of an [S[VO]] clause structure. In SOV and in T3 languages (and in VSO[21] languages, too), there is no (grammatical need for a) VP external functional subject position since pre- and postverbal argument positions are within the directionality domain of the ambidirectional verbal head. Hence there is neither room nor need for an expletive subject.

(21) a. Bylo nakureno v komnate   (Было накурено в комнате)
       was smoked in room
   b. Bylo napisano ob ètom v gazete   (Было написано об этом в газете)
       was written about this in newspaper

Let us turn now to the LLC (= left-left-constraint). This is a constraint on left-adjoined adjuncts to left-headed (= head-initial) phrases, that is, adjuncts off-side of the directionality area of the head of the phrase (Haider 2019). In a language like English or French, with head-initial VP and NPs, LLC restricts prenominal attributes as well as preverbal adverbial phrases.

(22) a. [a much easier (*than I thought)] *task*.
   b. The boss will [much more often (*than you would like)] *call* you into his office.
   c. Lausanne a [[plus souvent (*que Berne)] perdu].   French
       Lausanne has more often (than Bern) lost
   d. une [[fière (*de soi)]$_{AP}$ femme]
       a proud (of herself) woman

German and Dutch are head-initial with NPs but head-final with VPs. So the LLC is at work only in NPs (23b,d), but not in head-final VPs (23a,c). If Slavic languages were [S[VO]] languages, the LLC is predicted to constrain prenominal attributes as well as preverbal adverbial phrases, just like in English and any other SVO language.

(23) a. Sie hat das Problem genau so schnell (wie ihr Konkurrent) gelöst   German
       he has the problem exactly as fast (as her competitor) solved
   b. eine [fast so geniale (*wie Newtons) Lösung
       an almost as ingenious (as Newton's) solution
   c. De ziekte heeft zich [veel sneller (dan werd verwacht)] verspreid.   Dutch
       the disease has itself [much faster (than was expected)] spread

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[20] An adverbial expletive would not fall prey to the null subject property, and there exist regional varieties indeed, with an expletive in an intransitive passive, such as Venetian: *Z'è stà parlà de ti.* ('*There* has been spoken about you'). My gratitude goes to Cecilia Poletto (p.c.), who is native in this language, for certifying it.
[21] McCloskey (1996:261) emphasized that in a VSO language such a Irish, subjectless sentences do not contain an expletive subject: nuair a bhí tráite síos uaidh
        when COMP was ebbed down from-it ('when the tide ebbed down from it')

s. een [veel sneller (*dan een fietser)] paard
    a much faster (than a cyclist) horse

If VPs are T3 phrase-structures in Slavic languages, and NPs, too, LLC-effects are predicted to be absent in any of these phrases, and this is the case indeed, as the examples in (24) and (25) illustrate. Stylistically, extraposition of the comparative PP is an alternative and may be stylistically preferred, whence the slight degradation in (24b), but the given order is grammatical and acceptable.

(24) a. V prošlom godu [gorazdo bol'še *čem Igor*] vyigrala tol'ko Maša   Russian
    in previous year [much more *than Igor*] won only Mary
    'Last year, only Mary has much more won than Igor.'

    b. ?W zeszłym roku [dużo więcej *niż Jarek*] pracowała tylko Roza   Polish
    in last year much more *than Jarek* worked only Roza

(25) a. [verni-jat (na žena si)] măž   Bulg.
    [faithful$_{Def}$ (to wife his$_{REFL}$)] husband

    b. [vernyj (svoej žene)] muž   Russian
    faithful his wife$_{DAT}$ husband

    c. [wierny (swojej żonie)] mąż   Polish
    faithful his wife$_{DAT}$ husband

Let us summarize this section: The properties under discussion, namely scrambling, variable V-positioning, lack of subject expletives in subjectless clauses, and the absence of LLC effects are independent properties. Their uniting bond is the T3 nature of the phrasal architecture in Slavic languages. For those who insist that Slavic languages are [S[VO]] languages with exceptional properties, all these properties are completely unexpected and independent 'exceptions', and there are more 'exceptions' (see Haider & Szucsich submitted).

5. The null theory of scrambling

For a syntactical characterization of Scrambling, it is sufficient to identify the phrases that provide room for reordering the base order of items within these phrases. The resulting potential of order variation is occupied by other modules that partition the set of order variants in terms of order preferences of their own. Here is once more a non-exhaustive, merely illustrative list of the resulting effects that call for explanation & coverage.

- ☑ Scrambling extends the binding domain of quantifiers for variable-binding.
- ☑ Scrambling extends the scoping domain of quantifiers.
- ☑ Scrambling separates the domains of given and new information.
- ☑ Scrambling clears the clause final area for focused items.
- ☑ Scrambling provides contiguity for idiom formation.
- ☑ Scambling is absent in head-initial phrase structure settings.
- ☑ .....

Phenomenologically, scrambling is word order variation. Grammatically, scrambling is a structural property, namely the availability of alternative structural positions for the arguments of the head of a phrase within the directionality domain of the head. It is this structural property that accounts for the scrambling potential of a phrase cross-linguistically. Let us start with the

simple case of a verb, whose licensing directionality is 'to the left', as indicated by the sub-scripted arrows in (26).

(26) a. $[A_1 \leftarrow V°]_{VP}$
   b. $[A_1 \leftarrow [A_2 \leftarrow V°]$
   c. $[A_1 \leftarrow [A_2 \leftarrow [A_3 \leftarrow V°]$
   d. $[A_{2\text{-}i} \leftarrow [A_1 \leftarrow [\text{--}_i \leftarrow V°]$

Arguments are serialized according to their ranking in the lexical argument structure and according to the right-branching constraint (viz. merger 'to the left'). The result is – depending on the number of arguments to be projected – one of the three VP-structures in (26a-c). Next, let us compare (26d), viz. the scrambled variant of (26b), with (26c). The two phrases are structured *isomorphically*. The difference is in the number of arguments. In (26c) the structure accommodates *three* arguments in *three* argument positions. In (26d), however, the structure contains the very same *three* positions, but only *two* arguments, since one is not in its base position anymore, that is, not in the position in which it is projected according to the ranking of arguments in the lexical-argument structure of the verbal head. This position is empty and counts as a gap position whose filler is higher up in the structure, in an another argument position. This configuration is rendered possible because a head-final head is able to licenses any position merged to the left of it or one of its projections because the directionality of licensing is identical with the universal directionality of merger, that is, 'to the left'.

The situation is entirely different for head-*initial* projections, despite the fact that the same rules and principles are at work. The essential difference is the *directionality mismatch* between the parametric direction of licensing and the universal direction of merging. The head of a head-initial phrase licenses 'to the right', but merger is to the left. A minimal compatible structure is (27a). Once there is more than one argument, it is projected outside of the directionality domain of the head, as in (27b). If A_x is the subject, it gets licensed by a functional head that selects the structure (27b) as a VP. Since licensing requires minimal & mutual c-command, A_x is raised to the spec position of the functional head.

(27)   a. $[V° \rightarrow A]$
      b. $[A_x [V° \rightarrow A_y]]$

How is the VP structured if there is more than one object to be accommodated? Let's assume, A_x and A_y are the two objects of a double object verb. Then A_x is not directionally licensed in its position in (27b) by the verbal head since the head, and therefore any projection of the head, licenses only 'to the right'. The grammatical solution is this: The verb is re-instantiated in a higher position (28a). This is the grammatical causality of the "shell"-structure[22] of complex head-initial phrase. There is only a single head item, but it has to be instantiated in two positions. So, the result is a filler-gap dependency, aka head-chain. What tends to be constantly overlooked by grammarians who stare only at VPs like (28a) is the fact that complex head-initial NPs (28b) are structured in the same way (Haider 1992a,b).

(28) a. $[V°_i [A_x [\text{--}_i \rightarrow A_y]]]$

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[22] Note that the lower position is just the base position of the re-instantiated head. There is no need of inventing a "*little v*" category. It follows immediately from the system, and, it follows only for head-initial phrases. The fruitless search for "little v" in OV languages can be ended. There simply is no "little v" in a head-final VP.

b. [N°$_i$ [A$_x$ [--$_i$ → A$_y$]]]

Structures such as (28a) and (28b), do not provide *any room* for scrambling. If one of the two arguments were placed in the phrase initial position, it would be outside of the directionality domain of the head. If on the other hand, A$_y$ were scrambled across A$_x$, the minimal c-command relation between the head and A$_x$ (necessitated by the general licensing constraint) would be disrupted. In other words, the order in (28a) and (28b) is the only structurally available order for the objects A$_x$ and A$_y$.[23] As a consequence, head-*initial* phrases – VPs as well as NPs – are no domains of scrambling since the resulting structures are not well-formed VPs or NPs. As a consequence, serialization is invariant. This is a property of phrase structuring.

Let us turn now to head-*final* and *T3*-phrases. Such phrases provide ample variation room. (29) lists the six possible serialization patterns for three phrases in a head-final VP. The first one (29a) is the base order. The other five options are structures with a serialization that is not the serialization of the base order of arguments as determined by the lexical argument structure of the verbal head. However, any position in this structure is a position within the directionality domain of the head and hence a possible A-position. The choice of one of these structures depends on the interaction with other modules, such as IS or Binding.

(29)   a. [A$_1$ ← [A$_2$ ← [A$_3$ ←V°]]]   SOV base order
        b. [A$_1$ [A$_{3-i}$ [A$_2$ [--$_i$ V°]]]]   SOV scrambled
        c. [A$_{3-i}$ [A$_1$ [A$_2$ [--$_i$ V°]]]]   SOV scrambled
        d. [A$_{2-j}$ [A$_1$ [--$_j$ [A$_{3-i}$ V°]]]]   SOV scrambled
        e. [A$_{2-j}$ [A$_{3-i}$ [A$_1$ [--$_j$ [--$_i$ V°]]]]]   SOV scrambled
        f. [A$_{3-j}$ [A$_{2-i}$ [A$_1$ [--$_j$ [--$_i$ V°]]]]]   SOV scrambled

Here are examples. For (30a) and for (30b), but not for (30c), there are well-formed structures that are compatible with the respective serializations. (30a) is an instance of (29e), preceded by a complementizer. (30b) is well-formed since it meets the structural properties of a declarative clause, based on (29d), with fronting the V'-constituent of the VP to the clause-initial position. (30c) is ill-formed. There is no well-formed structure that covers this array of terminals.

(30) a. dass ihrem Onkel das Klavier eine hiesige Firma zustellte
        that (to) her uncle$_{Dat}$ the piano$_{Acc}$ a local company$_{Nom}$ delivered
     b. Das Klavier zugestellt hat ihrem Onkel eine hiesige Firma.
     c.*dass ihrem Onkel das Klavier zustellte eine hiesige Firma

IS typically partitions a structure into portions, such as background vs. focus. (30b) would be a perfect answer to a question like "*Who moved the piano to her uncle's flat*?" The topic part, that is, the information already contained in the question is presented first, in the fronted VP. Background information precedes the focal part, that is, the subject as the question-answer focus. Hence (28d) is the structure that meets the requirements.

Analogous considerations apply to items that are subject to binding conditions. If the binder is a lower-ranked argument, then its domain can be enlarged by fronting. In (31), the quantified

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[23] The verb is re-instantiated in a higher position only for licensing the immediately discharged, positionally unlicensed argument and not for an already licensed argument.

direct object binds the pronominal variable, that is, the possessive pronoun of the subject. The suitable structure is the structure with a scrambled direct object.

(31) a. wenn jeden[i] Menschen sein[i] Engel als Wächter begleitet[24]

      if each human-being$_{Acc}$ his angel$_{Nom}$ as custodian accompanies

Let us turn now to T3 phrases. Since the licensing domain of the head of a T3 phrase is not restricted directionally, it licenses ambidirectionally (32). As a consequence, T3-phrases have the full variation (= scrambling) potential of head-final phrases, since any position is within the domain of the head. A second variation potential comes from variable head-positioning. In (32), the alternative head-positions of the verb are indicated by brackets. Taken together, these two dimensions of structural variation account for the famous word order freedom of phrases and clause in Slavic and other T3 languages.

(32) $[(V°_{\rightarrow})\ A_1\ (_{\leftarrow}V°_{\rightarrow})\ A_3\ (_{\leftarrow}V°_{\rightarrow})\ A_2\ (_{\leftarrow}V°)]_{VP}$ T3 verb phrase

As in the head-final setting, the alternative verb positioning as well as the availability of scrambling positions for arguments is utilized and partitioned by other modules of grammar, notably by IS. Slavic word order has always been described in terms of information structure categories (theme, rheme, focus, ...) because this is the phenomenological and easily detectable aspect of the phenomenon.

6. Concluding remark

The cross-linguistic incidence of 'Scrambling' is a by-product of phrase structuring. The parametric directional licensing relation that associates the head of a phrase with its phrase mates brings about a potential for variation in head-final and T3 phrases. This syntactic potential is occupied and partitioned by components of grammar superimposed to syntax, such as information structuring, binding, scoping, or prosody. Properties that seem to immediately correlate with scrambling are not syntactic triggers but resultant properties of superimposed systems that utilize the variation space provided by phrase structures. The apparently incoherent set of alleged triggers is but the incoherent aggregate of properties of subsystems that utilize the variation space. The motivation for the futile search of the syntactic trigger of scrambling is just a – deceptive – desire of a specific theoretical conviction.

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[24] Source: Zeitschrift für die historische Theologie, Vol. 12:108.

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