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## Introduction: approaches to and properties of scrambling

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The present volume deals with the issue of "scrambling", the phenomenon of variable word order within a clause. Ross (1967), who was one of the first to discuss this phenomenon within the generative paradigm, attributed the freedom of constituent order in languages such as German, Latin and Russian to the existence of a stylistic reordering rule, which stated that two adjacent constituents can be permuted if they are clause-mates. Ever since Ross's initial discussion of scrambling, various alternative analyses have been proposed within generative grammar to account for the occurrence of alternate word orders in various natural languages. In this introduction, we will give a brief overview of the various approaches towards scrambling (cf. also É. Kiss (this volume) and Grewendorf — Sternefeld 1988), and discuss several issues related to the free word order phenomenon which will be dealt with more extensively in the various contributions to this volume.

A basic dichotomy in the current approaches towards scrambling is that between a movement approach versus a base generation approach. According to the former, there is one underlying word order and the variety of alternate word order arrangements in a clause is the result of movement. The latter approach claims that there is not one basic order of constituents and that the variable word order is the result of free generation of constituents in an arbitrary order at D-structure. In other words, free constituent order is a phenomenon already present at D-structure (cf. Neeleman, Bayer — Kornfilt). The difference between the two approaches can be illustrated by means of the following examples from German:

- (1)a. ...*weil*      *Hans wahrscheinlich das Buch*      *gekauft*  
       ...because    Hans probably      that book      bought

*hat*  
 has

- b. ...*weil* *Hans das Buch wahrscheinlich gekauft hat*

- (2)a. ...weil niemand dieses Buch gekauft hat  
 ...because nobody this book bought has
- b. ...weil dieses Buch niemand gekauft hat

The movement analysis considers (1a) and (2a) to be the D-structure constituent orders, from which the inverted S-structure orders "Direct object - Adverb" (1b) and "Direct object - Subject" (2b) respectively are derived via "Move  $\alpha$ ". The base-generation analysis generates both constituent orders at the level of D-structure. In other words, the major constituents do not have a fixed syntactic position at D-structure.

A central assumption in the base generation approach to scrambling is that theta assignment and case assignment do not universally presuppose adjacency between assigner and assignee (See Bayer — Kornfilt, É. Kiss, and Neeleman). That is at D-structure a direct object NP can receive a theta role from a verb when a subject as in (2b) or an adjunct as in (1b) intervenes. Hence, the non-adjacent direct object NP still occupies an A(argument)-position (i.e. a syntactic position that can be assigned a theta role) in those scrambled structures. At S-structure, the verb is able to assign accusative case to the non-adjacent direct object NP in the OSV- or SO Adjunct V-sequences.

Under a movement analysis, it is generally assumed that the direct object NP is adjacent to the verb at D-structure, from which it receives a theta role under sisterhood. So, there is one basic word order, and the alternate order(s) is (are) derived by means of some sentence-internal movement operation leading to a syntactic chain. The relevant question then is whether the scrambled constituent heads an A-chain or an A'-chain (see below for further discussion).

Within the base generation approach, we can further distinguish a configurational and a non-configurational analysis of constituent structure. According to the former, the variable D-structure representation is a hierarchical, asymmetric (i.e. configurational) constituent structure in which the arguments and adjuncts are freely distributed (cf. Bayer — Kornfilt for German and Neeleman for Dutch). According to the latter the variable D-structure representation has a flat (i.e. non-configurational) phrase structure (cf. among others É. Kiss for Hungarian). Subject and object are not separated by a VP-boundary, and the arguments within a VP are not hierarchically organized (cf. also Haider 1988 for German).

The issue of scrambling (i.e. freedom of constituent order) and configurationality (i.e. hierarchy of constituent structure) is also discussed in Hale's paper on Warlpiri, a language with great freedom of constituent order. He argues that there is little evidence in support of a movement theory of Warlpiri free word order. He assumes that there are two levels of representation in Warlpiri: a core argument structure and an overt phrase structure. The first level of representation conforms to the configurational type and consists of a predicate and its associated argument slots which are occupied by non-overt (pronominal or anaphoric) elements. The second level of representation is less clearly configurational. The overt nominal expressions are analyzed as adjuncts which are linked via coindexation to the argument positions of the core argument structure of the clause, and are rather freely distributed within the clause.

Obviously, the movement and the base generation analyses of scrambling make different predictions with respect to the properties that the phenomena of free word order (the scrambled structures) are expected to display. Under a movement approach, one would expect scrambling to display properties generally associated with movement-derived structures: there is an antecedent-trace relation; the relation between the trace and its antecedent is apparently unbounded; scrambling obeys island constraints. As far as the last property is concerned, Webelhuth (1989) has shown that scrambling phenomena in German are sensitive to Ross's (1967) island constraints on movement transformations. The following ill-formed sentences from German illustrate the sensitivity of scrambling to island effects such as the Left Branch Condition (3a), the Coordinate Structure Constraint (3b), the PP-island condition (3c) (examples taken from Webelhuth 1989):

- (3)a. \*...weil meines Bruders gestern [--- Auto] gestohlen  
 ...because my brother's yesterday car stolen  
 wurde  
 was

- b. \*...weil **Hans** jemand [-- und Maria] angemeldet  
 ...because Hans somebody and Mary registered

hat  
 has

- c. \*...weil **ihre** Freiheit die Leute lange [für --]  
 ...because their freedom the people long for

gekämpft haben  
 fought have

At the same time, it should be noted that the free word order phenomenon does not always display properties exhibited by movement operations. To mention one example, the phenomenon of split topicalization in German (cf. Van Riemsdijk 1989) as exemplified in (4a), is not found in scrambled structures (cf. Neeleman):

- (4)a. **Bücher** hat Hans nicht [viele --] gekauft  
 Books has Hans not many bought

- b. \* **Hans** hat **Bücher** nicht [viele --] gekauft]

It is often less clear whether scrambled structures display the property of apparent unboundedness. Ross (1967) initially formulated the descriptive generalization that scrambling is clause-bound. In contrast with Wh-movement or topicalization, a finite CP may never be crossed by a scrambled constituent in a language like German.

- (5) \*...weil **Hans den Wagen** versprochen hat [dass er --  
 ...because Hans the car promised has that he  
 reparieren würde]  
 repair would

It seems, however, that this clause-boundedness restriction does not hold universally. Some languages turn out to exhibit Long Distance scrambling. See, for example, the following contributions in this volume: Mahajan for Hindi, Browning — Karimi for Persian, Müller

— Sternefeld for Russian and Japanese, Ueyama for Japanese. German and Dutch have a construction that is somewhere in between Verb Raising (clause union) and extraposition which is sometimes referred to as the “Third Construction” (Den Besten — Rutten 1989). One analysis of the phenomena in question is to assume that it is possible to scramble the object-NP of infinitival *zu/te*-complements into the matrix-IP. That would be an instance of Long Distance scrambling. (cf. Bayer — Kornfilt for an alternative analysis in terms of base generation.)

- (6) ...weil **Hans den Wagen**<sub>i</sub> versprochen hat [*PRO* t<sub>i</sub>  
 ...because Hans the car promised has  
 zu reparieren]  
 to repair

If one adopts the view that scrambling is an instance of “Move  $\alpha$ ”, the question arises what kind of movement is involved. Is it similar to NP-movement in passive and raising to subject constructions, or does it resemble Wh-movement in Wh-interrogative and topicalization constructions? Several properties distinguish structures derived by NP-movement from those derived by Wh-movement. These concern the target of movement, the landing site and the trace. In (7), an inventory of the main properties is given:

(7)

| Category of the target<br>Landing site                          | NP-movement                                        | Wh-movement                                                                                             |
|-----------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|                                                                 | NP<br>A-position by<br>substitution<br>NP-position | XP (NP, PP, etc.)<br>A'-position by<br>substitution or adjunction<br>[Spec, CP] or adjoined<br>position |
| Properties of the antecedent<br>Case<br>Chain                   | Yes<br>A-chain                                     | No<br>A'-Chain                                                                                          |
| Properties of the trace<br>Binding theory<br>Theta role<br>CASE | Principle A<br>Yes<br>No                           | Principle C<br>Yes<br>Yes (when target = NP)                                                            |

Under standard assumptions, the two types of movement processes can also be distinguished on the basis of the following diagnostics. First of all, a Wh-trace (i.e. a variable) as opposed to an NP-trace can license a parasitic gap. This contrast is illustrated in (8). Secondly, Wh-movement triggers Weak Crossover effects, as in (9a). Weak crossover is given when an operator at LF, c-commands a bound variable type pronoun and its own trace at the same time. NP-movement, on the other hand, does not yield any WCO-effects (see (9b)). It rather repairs potential WCO-configurations (an anti-WCO-effect). This is exemplified in (9c). Thirdly, a structure derived by Wh-movement exhibits reconstruction or connectivity effects: reflexive binding can be reconstructed, for example, when the anaphor occurs in an A'-position (see (10a)). NP-movement, on the other hand, does not show any reconstruction effects. Rather, movement of an NP creates new binding possibilities (see (10b)).

- (8)a. Which article<sub>i</sub> did you file *t<sub>i</sub>* [without reading *e<sub>i</sub>*]?  
 b. \*The article<sub>i</sub> was filed *t<sub>i</sub>* [without reading *e<sub>i</sub>*].
- (9)a. \*Who<sub>i</sub> does it seem to his<sub>i</sub> father [that Mary likes *t<sub>i</sub>*]?  
 b. John<sub>i</sub> seems to his<sub>i</sub> father [*t<sub>i</sub>* to be intelligent].  
 c. Who<sub>i</sub> seems to his<sub>i</sub> father [*t<sub>i</sub>* to be intelligent]?
- (10)a. [Which picture of himself]<sub>i</sub> do you think John<sub>i</sub> likes *t<sub>i</sub>*?  
 b. They<sub>i</sub> seem to each other<sub>i</sub> [*t<sub>i</sub>* to be intelligent].

On the basis of the abovementioned properties and diagnostics, one could try to find out what movement operation is at the basis of scrambling structures. Do free word order constructions in language X display properties typical of Wh-movement or of NP-movement? This question is elaborately discussed in various articles in this volume.

It is characteristic, however, for the present situation that there is no consensus among proponents of the movement approach about the type of movement involved in scrambled structures. Some linguists assume that scrambling behaves more like Wh-movement, and as such involves movement to an A'-position, i.e. a position that is structurally inaccessible to theta-role assignment (See Webelhuth 1989, Müller — Sternefeld (this volume) and Vikner (this volume) for German). In general, this A'-position is analyzed as an adjunction site to VP or IP

(cf. Müller — Sternefeld for a brief discussion of parametrization across languages of adjunction sites for scrambling). Other linguists claim that scrambled structures are derived by an NP-movement-like operation and hence involves movement to an A-position, i.e. a syntactic position which can be assigned a theta role. It is often assumed nowadays by proponents of the "scrambling-to-A-position" that the scrambled NP is moved to the specifier position (an A-position) of some functional head such as AGR-O, in order to receive Case under Spec-head agreement (cf. Mahajan (this volume); Vanden Wyngaerd 1989; Déprez (this volume)). Under such an analysis, scrambling resembles NP-movement in being case-driven movement (i.e. substitution) towards an A-position.

Restricting ourselves to German, let us briefly mention some of the argumentation given in support of each of the two movement analyses. The following arguments have been adduced among others to support the A-movement analysis. First, the fact that a finite clause boundary may not be crossed by a scrambled constituent in German (as in (5)) reminds us of the clause boundedness of NP-movement or anaphoric binding (a Tensed-S-effect) in German, which can be explained in terms of Principle A of the Binding Theory (cf. Fanselow 1990). Secondly, scrambling may give rise to new A-binding possibilities (cf. Webelhuth 1989; Lee and Santorini). In (11a), for example, scrambling the direct object *die Frauen* across the indirect object *einander* creates a new binding relation. Thirdly, scrambling does not exhibit weak crossover effects (cf. Haider 1988; Fanselow 1990; Lee and Santorini). This is exemplified in (11b). Fourthly, scrambling does not allow for reconstruction. Scrambling of the anaphor in (11c) yields an ill-formed structure, because the moved anaphor will not be properly bound by the antecedent *die Frauen* since reconstruction does not apply to the scrambled anaphor.

- (11)a. *weil wir die Frauen<sub>i</sub> einander<sub>j</sub> *t<sub>i</sub>* vorgestellt haben*  
 because we the women each other introduced have
- b. *weil jeden<sub>i</sub> seine<sub>i</sub> Mutter *t<sub>i</sub>* mag*  
 because everyone-ACC his mother-NOM likes
- c. \**weil einander<sub>i</sub> die Frauen<sub>j</sub> *t<sub>i</sub>* nicht mögen*  
 because each other-ACC the women-NOM not like

As the reader will notice, there is not always consensus on the facts either. Some reservations with respect to the robustness of some of the generalizations such as the above are in order.

Some of the argumentation in support of the "scrambling as A'-movement" approach can be summarized as follows. First, scrambling is blocked in syntactic environments where Wh-movement is blocked (cf. Webelhuth 1989). That is, scrambling exhibits the same island behavior as Wh-movement, as was illustrated in (3). Secondly, scrambling, like Wh-movement, shows anti-crossover effect. This is shown by (12a), which is taken from Webelhuth (1989). Thirdly, scrambling moves NPs as well as non-NPs (cf. Webelhuth 1989; Vikner (this volume)). Fourthly, scrambling appears to license parasitic gaps (cf. Webelhuth 1989; Vikner (this volume)).

- (12)a. ?...weil [manche der Behauptungen, die Hans<sub>i</sub>  
...because some-of the claims that Hans

während der Konferenz gemacht hatte] er<sub>i</sub>  
during the conference Made had he

zurücknehmen musste  
back-take had-to

- b. ...weil [mit Karl]<sub>i</sub> er nie <sub>t<sub>i</sub></sub> gesprochen hat  
...because with Karl he never spoken has

- c. ?...weil er den Patienten<sub>i</sub> [ohne PRO vorher e<sub>i</sub>  
...because he the patient without first

zu untersuchen] <sub>t<sub>i</sub></sub> operierte  
to examine operated

We refer the reader to the various papers in this volume for more elaborate discussion of (the tenability of) each of these arguments. A critical discussion of both types of movement approaches can be found in those papers which defend a base generation approach towards scrambling, viz. Bayer — Kornfilt, and Neeleman.

The difficulty of interpreting free word order structures becomes even more clear when we consider scrambled structures which appear

to exhibit mixed properties, i.e. both A- and A'-properties. This paradoxical situation is exemplified by the following sentences from German, taken from Webelhuth (1989) (See also Mahajan for Hindi, Browning — Karimi for Persian).

- (13)a. ?Peter hat jeden Gast [ohne e anzuschauen] seinem  
Peter has every guest without to-look-at his

Nachbarn <sub>t</sub> vorgestellt  
neighbor introduced

'Peter introduced every guest to his neighbor without looking at.'

- b. Peter hat die Gäste<sub>i</sub> [ohne e anzuschauen] einander<sub>i</sub> <sub>t</sub>  
Peter has the guests without looking-at each other

vorgestellt

introduced-to

'Peter introduced the guests to each other without looking at them.'

The scrambled structure in (13a) manifests both an anti-weak crossover effect (an A-property) and parasitic gap licensing (an A'-property). In (13b), the scrambled NP simultaneously binds an anaphor (an A-property) and licenses a parasitic gap (an A'-property).

This paradoxical situation raises the question whether the standard A/A'-dichotomy (See Chomsky 1981) is sufficient to adequately characterize the array of properties displayed by scrambled structures. According to Webelhuth (1989), the standard partitioning of phrase structure positions into A- and A-bar positions is too rough. He proposes that at least a third type of phrase structure position should be distinguished, viz. a mixed position exhibiting both A- and A'-properties. Scrambling in German is then considered a unitary process in which there is a single derived landing position (a VP or IP adjoined position) for the scrambled phrase which simultaneously exhibits A- and A'-properties. Movement to such a mixed adjoined position creates a chain which has both A- and A'-properties.

Webelhuth's paradox and the related question whether the standard typology of A- and A'-positions is adequate or not, are elaborately

discussed in various papers contained in this volume. Lee — Santorini, for example, also assume that scrambling (in German and Korean) is a unitary process of adjunction to VP (and perhaps IP). However, their approach to the paradox is based on the assumption that the binding and reconstruction properties of a chain are not determined by the structural position of its head, but instead by whether the head has undergone local movement or not. A-properties (or An(aphoric) properties in their terminology) are characteristic of chains formed by local movement. A scrambled NP in an adjunction position can therefore serve as a binder as long as its position is derived by movement within a local domain. Conversely, only a scrambled phrase in a position derived by non-local movement is eligible for reconstruction.

Deprez proposes to redefine the notions of A-position and A'-position so as to allow a different division of properties. She distinguishes [+HR]-positions and [-HR]-position (HR = Head Related). In case the scrambled object displays A-properties, movement equals substitution for a case-marked specifier position, i.e. a [+HR,+case]-position. When the scrambled object displays both A and A'-movement properties, movement equals substitution for a non-case marked specifier, i.e. a [-HR,-case] position. So, Deprez' analysis relates the mixed behavior to the caseless status of the specifier in those languages, and assumes the A and A'-properties are licensed simultaneously.

Mahajan's analysis dismisses the paradox as apparent by analyzing scrambling (in German and Hindi) as a non-unitary phenomenon. According to his analysis, the standard A/A' dichotomy is sufficient to adequately characterize the array of properties displayed by scrambled structures. He posits the existence of both an A-position landing site (a Spec-position) and an A'-position landing site (an adjointed position) for scrambled constituents. Scrambling as A-movement involves movement to the case-marked specifier of an intermediate functional projection ([Spec, AgrOP]); in the case of A'-movement to a caseless position it is adjointed to a maximal projection (cf. also Vanden Wyngaerd 1989). The combination of A and A'-properties of the scrambled phrase is the result of the successive application of an A-scrambling operation and an A'-scrambling operation. The first movement yields A-properties, the latter A'-properties. So, a sentence like (13b) is assigned a structural analysis in which the anaphor is bound by an antecedent in

an A-position while the parasitic gap is bound by a distinct antecedent occupying an A'-position.

Browning — Karimi also argue that the basic A/A' dichotomy is not sufficient to adequately characterize the array of properties displayed by scrambled structures in a language like modern Persian (an SOV-language). They argue that there are three types of scrambling in this language: object shift (cf. Holmberg 1986), clause initial scrambling and long distance scrambling. The object shift process, which moves a specific direct object in the sequence SU - IO - DO - V to a position between the SU and the IO, exhibits mixed properties. It displays both A-properties (viz. the property of case driven movement and the scrambled specific object can bind a reflexive) and A'-properties (the scrambled object can license a parasitic gap). They propose that the scrambled object occurs in a VP-adjointed position, where case is licensed under government by an inflectional head. Licensing of a parasitic gap is possible under the assumption that variable binding is also permitted from adjointed positions which are case licensed. The A-property of reflexive binding is related in their analysis to case-licensing: any position in which case is licensed is a position that can bind reflexives. Clause initial scrambling (adjunction to IP of a (specific or non-specific) argument) and long distance scrambling (adjunction of a specific or non-specific NP, or of a PP to the VP of a higher clause) are not case-driven and behave like A'-movements.

Ueyama notes in her article that also in Japanese, scrambling exhibits both A-movement properties (anaphor binding) and A'-movement properties (reconstruction). Given this mixed behavior, she rejects the standard view that scrambling in Japanese involves A'-movement (cf. Saito 1985; Hoji 1986) and proposes that the dichotomy of A vs A'-movement should be abandoned. Besides typical A-movements of arguments (i.e. case-driven non-operator movement) and A'-movements of arguments (i.e. non-Case-driven operator movement), scrambling in Japanese is of a third type, viz. non-Case-driven operator movement. So, whereas in A-movement (as in raising) the landing site is a case position, in scrambling case is assigned to the D-structure position of a scrambling chain. Ueyama assumes that the landing position is an adjointed position.

Finer's paper discusses scrambling operations in Selayarese (a VO-S-language). He claims that there are two preverbal clause-internal positions that elements scrambled out of their postverbal D-structure

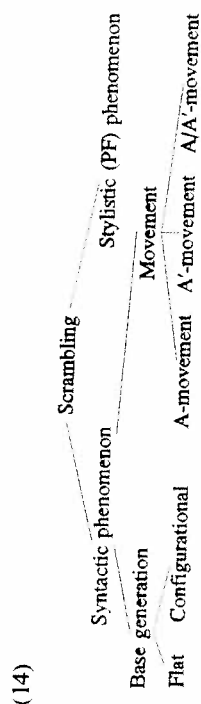
position may occupy: (i) a focus position, i.e. [Spec,IP] and (ii) a topic position, i.e. a position adjoined to IP. A phrase occupying the focus position exhibits typical A'-binding properties, such as reflexive binding reconstruction and vulnerability to WCO. The focus - gap relation is an A'-chain. The topic position is adjoined to IP and hence occupies an A'-position as well (the A' non-operator). It turns out, however, that a scrambled phrase occupying this topic position exhibits A-properties (e.g. the topic element does not trigger WCO-effects, nor reconstruction effects with anaphors moved in topic position) besides A'-properties. This mixture of symptoms will follow from its status as a non-operator in A'-position. So, the crucial distinction between the two positions is not one of argument versus non-argument, but one of operator versus non-operator.

Vikner's paper discusses two types of clause-internal object-movement in the Germanic languages: (i) Object shift found in Germanic SVO-languages (except English), and (ii) Leftward object movement (referred to as "Scrambling") in Germanic SOV-languages. Although the two reordering processes are analyzed as adjunction operations (to VP and, in a language like German, also IP), they differ from each other in their A/A'-properties. Object shift is analyzed as an A-movement operation, i.e. the moved element ends up in a (VP-adjoined) case-assigned position. The Object shift process goes along with V-to-I movement. The finite verb ends up in a position from where it can assign case to the adjacent VP-adjoined object (See also Deprez' contribution). Leftward object movement in SOV-languages, on the other hand, exhibits A'-movement properties: the scrambled element ends up in an adjoined caseless position.

Nikanne's paper discusses properties of the [Spec,IP] position in Finnish, which is occupied by the topic of the sentence. A characteristic of Finnish is that it avoids verb initial declarative sentences. The [Spec,IP] position must be filled either by a syntactic movement operation or a PF reordering. It is proposed that arguments originate within VP and that in the unmarked case the topic position is filled at S-structure with the NP highest in the theta hierarchy. In constructions where there is no nominative subject present, there is no element in [Spec,IP] at S-structure. In partitive structures, for example, the [Spec,IP] position need not be filled at S-structure, since the partitive NP receives partitive case from the verb within VP at S-structure. On the assumption that PF does not respect the theta hierarchy, the

partitive NP or some other element (e.g. an argument-PP or an adjunct-PP) can be moved into the [Spec,IP] position at PF.

So far we have seen various approaches towards the generation of free word order structures. Schematically (See also É. Kiss's contribution):



A question which arises is whether scrambling structures should receive a uniform treatment, both cross-linguistically and language-internally. É. Kiss notes in her article that in principle all four possibilities (i.e. base generation in a flat structure, base generation in a configurational structure, PF-movement, syntactic movement) may in principle be exemplified across languages. She considers Hungarian to be an instance of a language in which the freedom of word order is the result of base-generation of flat structure of an arbitrary argument order. Hale also notes in his paper that free word order phenomena across languages may be the result of different processes. He argues that whereas a language like Papago achieves word order variation through movement, the variations in overt phrase structure word order in a language like Warlpiri is not the result of movement, but results simply from the fact that (certain or all) overt phrasal expressions are adjuncts, which are linked to the grammatical arguments of the verb represented overtly by agreement morphology in the auxiliary.

Whereas some authors in this volume (e.g. Müller — Sternefeld for German) claim that scrambling is a unitary phenomenon intra-linguistically, others claim that free word order structures in one and the same language may result from different operations. Bayer — Kornfilt and Neeleman, for example, make a distinction between scrambled structures involving focused elements and "neutral" scrambled structures. The former involve an A'-movement operation, the latter are freely generated in D-structure. Mahajan analyzes the

scrambling phenomenon in a language like Hindi as a non-unitary phenomenon. He assumes that certain variable word orders result from A-movement, while others are derived by A'-movement.

As will be clear from this introduction and from the papers in this volume, there is no consensus at the moment about what the correct theory of free constituent order is. Competing analyses for scrambling are proposed, even for one and the same language. However, it is clear that this lively, still ongoing debate is gradually bringing us closer to a better understanding of the scrambling phenomenon.

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