A UNIFIED ANALYSIS OF CLITIC CLUSTERS IN WORLD'S LANGUAGES[1]

Zimmerling A. (meinmat@yahoo.com)

Moscow State University for the Humanities, MSUH

The paper proposes a unified analysis of complex syntactic objects defined as *clitic clusters*. A *cluster* is by definition a string of elements {a,b,c…n} which can function independently without combining with each other but are arranged in a rigid order when they assume a contact position, so that for each pair (a, b) the linear order a > b, i. e. 'a precedes b' is fixed. Elements conforming to this definition are called *clusterizing*. Rules ordering language elements in clusters are called *Template Rules*. In the first section I analyze Template Rules as empiric generalizations made on text corpora representing the normative usage of world's languages from the class of languages with clusterizing clause-level elements. In the final section I analyze Template Rules as linearization algorithms. The general conclusion is that clusters ordered by Template Rules are normally non-homogenous regarding their morphosyntactic and prosodic values. I furthermore argue that a unified theory of clusters can be build with little or no resource to the prosody of the clitic elements.

Key words: clusterization, clitics, syntax, linearization algorithms, template rules.

Complex objects consisting of clusterizing sentence elements are attested in a large class of world's languages, cf. [Zaliznjak 1993], [Anderson 1993]. Empirically-oriented research has shown that almost all clusterizing elements attested in natural languages fall in the class of *clitics*, i. e. prosodically deficient elements linearized by specific rules presumably not affecting non-clitic elements, cf. Zwicky (1977), Sadock (1995). At the same time, not all clitics are clusterizing. Theory-oriented authors have tried to explain the nature of the clitic vs non-clitic distinction in terms of constituency grammars. In recent versions of the Minimalist Program, standard non-clitic elements (except for the *pro*-forms) are treated as maximal projections, i. e. groups (XP), while clitics are usually treated as heads (°X), cf. [Franks 2008] or as so-called left-branching elements (XP/°X), i. e. reduced groups, cf. [Bošković 2001]. Consequently, discussion of clusters in the Minimalist Program and related generative frameworks often starts from stating the researcher's credo — whether (s)he believes that clitics are °X-s or XP/°X-s, and goes on global architecture of language. As a result, analysis of clusters in the framework-based research crucially relies on issues not

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directly related to the surface order of elements — whether syntax and morphology are one module of grammar or two separate ones, on the linguist's wish to go in for prosody of the clusterizing elements and the linguist's readiness to assemble clusters from prosodically and morphologically heterogeneous items, etc. For instance, if a framework-based author adopts a controversial definition of a clitic as an element 'lacking stress'[2] and comes across clusters consisting of both unstressed and stressed elements, (s)he will likely conclude that these are some occasional sequences of heterogeneous elements. In short, current linguistic theories capitalize the idea that clusterizing elements are clitics, explain fixed combinations of adjacent elements with special features postulated for clitics without postulating special features for clusters and impose conditions that clusterizing elements should be homogeneous in all or most respects with regards to prosody, morphology of syntax. This condition may be called Homogeneity Condition:

(i) Homonegeity Condition, HC.
Clitics clusters must consist of clitics sharing all relevant prosodic and morphosyntactic features typical of clitics in this language.

The main drawback of the approach outlined above is that no one has proved yet that clusterizing and non-clusterizing clitics have the same properties. Moreover, it is unclear whether these two sets are intersecting or not. Let us define non-clusterizing clitics formally.

(ii) A non-clusterizing clitic is a phrase-level or clause-level element that does not clusterize with other elements of the same level.

Note that according to the proposed definition a single clitic *c* is treated as clusterizing if it can be substituted with a cluster [$_{CLP}$ abc] containing the element *c* in other phrases with the identical fragment of syntactic structure. E.g., if a language has both reflexive clitics used with reflexive verbs and auxiliary clitics and they invariably clusterize as [$_{CLP}$ CL_{Refl}, CL_{Aux}], a single auxiliary clitic is considered clusterizing if it appears in a sentence without a reflexive verb. Similarly, if a language only has 1–2 p. auxiliary clitics which clusterize with reflexives but lacks 3 p. auxiliary clitics, a single reflexive clitic is considered clusterizing if used in a sentence with a verb in the 3 p.[3] Similarly, if a language has a question marker which makes up clusters with a set of pronominal clitics in yes-no questions, its absence in non-interrogative clauses using the same set of pronominal clitics does not falsify the hypothesis that this marker and a pronominal clitic clusterize if they both are realized overtly in the same clause. I conclude that the optional character of clitics, selective restrictions imposed on their

2 This step is made i. e. in [Klavans 1985].

3 This is attested, e. g. in Old Novgorod Russian [Zaliznjak 1993]. In Kashibo-Kakataibo (Pano language family, spoken in Peru) 1–2 p. personal agreement markers clusterize with the discourse clitic *ka*, but in the 3 p. overt agreement markers do not show up, while *ka* is still possible [Zariquiey Biondi 2011].

combinations and correlations between subsets of clitics and types of speech acts are not by themselves sufficient for denying clusterizing capacities of a clitic. Meanwhile, there are indisputable examples of non-clusterizing clitics: these are elements that either do not occur in adjacent position to any other clitics of the same type[4] and phrase level or do not form fixed sequences with them. E.g., Serbo-Croatian has a set of enclitic pronouns in the accusative case which can attach to prepositions, cf. (1a): these enclitics do not combine with any other enclitics and are phrase-level (PP-level) elements that do not climb i.e. cannot be extracted to a higher domain, cf. the ill-formedness of (1b).

(1) SC. a. Da =*je* Ivan <u>računao</u> [$_{PP}$ na=*me*].
that$_{COMP}$ be$_{CL.AUX.3SG}$ Ivan count$_{PST.3SG.M}$ on me$_{CL.ACC.1SG}$
'that Ivan counted on me.'
b. *[$_{CP}$ da=***me*** $_{i}$ =*je* Ivan <u>računao</u> [$_{PP}$ na __$_{i}$]].

Serbo-Croatian also has segmentally identical accusative enclitics *me*$_{ACC.1SG}$, *te*$_{ACC.2SG}$ which are clause-level elements encoding predicate arguments[5]. Clause-level accusative enclitics in Serbo-Croatian clusterize with other enclitics and climb i.e. can be extracted to a higher clause[6]. It is a priori unclear whether the non-clusterizing *me*$_{ACC.1SG}$ and the clusterizing *me*$_{ACC.1SG}$ in Serbo-Croatian should be analyzed as different elements or not: they have the same morphological marking but entirely different syntactic properties. If syntax of SC *me*$_{ACC.1SG}$ crucially depends on its domain — clause vs phrase, it seems better to analyse the clause-level clusterizing SC clitic *me*$_1$ and the phrase-level non-clusterizing SC clitic *me*$_2$ as two homonyms but not as one and the same underlying syntactic element.

Another empirical challenge to the hypothesis that the sets of clusterizing and non-clusterizing clitics intersect comes from the distribution of particles. In a number of languages indeclinable particle clitics seem to convey different meanings in configurations where they clusterize and where they do not. E.g., in Old Novgorod Russian the enclitic particle =*že* was non-clusterizing if conveyed an identifying meaning, cf. *totъ=že* 'the same', or an additive meaning, cf. sъ *Gyurьgemъ=že sъ Lukoyu* 'with X and with Y' but clusterizing in all other meanings [Zaliznjak 1993: 282]. Again, it is possible to associate the identifying and additive meanings of =*že*$_2$ with non-sentential uses, where it does not pertain to the clausal predicate, and to separate them from the clusterizing Old Novgorod Russian particle *že*$_1$. It is natural that the

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4 This stipulation is necessary if we want to separate possible <u>proclitic</u> + <u>enclitic</u> sequences, with a proclitic serving as a host element for the enclitic and a single enclitic attached to it, cf. example (1b), from clusters consisting of two or more proclitics/two or more enclitics.

5 The paradigms of Serbo-Croatian clause-level accusative enclitics and Serbo-Croatian PP-level accusative enclitics are similar but not identical, since the PP-level accusative enclitic =*nj*$_{3SG.ACC}$ has a form deviating from the clause-level accusative enclitics =*ga*$_{3SG.ACC.M.}$ and =*ju*$_{3SG.ACC.F}$ [Ćavar, Wilder 1999: 445].

6 Cf. [Ćavar, Wilder 1999: 447–451] for the discussion of climbing out of infinitive clauses in Serbo-Croatian.

clause-level Old Novgorod Russian clitic *že*$_1$ clusterizes with other clause-level clitics, since it is a clause-level operator itself, while the phrase-level (NP-level) *že*$_2$ does not clusterize, since it is an NP-level element which serves as a means of highlighting particular discourse referents. Here different syntactic status of the NP-level non-clusterizing clitic *že*$_2$ vs clause-level clusterizing clitic *že*$_1$ corresponds to differences in semantics, while their prosodic features do not change: both =*že*$_1$ and =*že*$_2$ are strict enclitics and do not take the initial position in their domains.

There are also languages where clusterizing clitics and their non-clusterizing counterparts differ in the prosodic type. E.g., in Modern Slovak the particle =*už*$_1$ 'already', 'still' is clusterizing if it is an enclitic, cf. (2a) and non-clusterizing if it is a proclitic *už*$_2$=, cf. (2b). The clusterizing enclitic =*už*$_1$ cannot be clause-initial and is invariably placed after clusterizing clitic pronouns like =*im*$_{\text{DAT.3PL}}$ in (2a), while the non-clusterizing proclitic *už*$_2$=can be clause-initial and occasionally precedes enclitic pronouns as in (2b). If one treats =*už*$_1$ and *už*$_2$= as one and the same underlying syntactic element and not as a pair of homonyms, one will arrive at the wrong conclusion that the enclitic particle =*už*$_1$ is not part of the Slovak clitic cluster, since the relative order of { *už*$_1$ } ∪ {*už*$_2$} and Slovak pronominal enclitics is apparently invertible. This bug is eliminated if we separate *už*$_1$ and *už*$_2$ as elements with different categorial features and do not treat the proclitic + enclitic sequences like #**už** =*ju* in (2b) as clusters.

(2) Svk a. Ale [$_{\text{PP}}$ v hĺbke duše] *sa* =*im* =***už*** tešil.
'But deep down he **still** found comfort in the hope <that P>'
b. #**Už** =*ju*$_i$ aj začinajú [$_{\text{IP}}$ robiť __$_i$].
'One has **already** started building *it* <the road>'.

(2) Svk. a. Ale [$_{\text{PP}}$ v hĺbke duše] *sa* =*im* =***už*** tešil.
But at heart CL$_{\text{REFL}}$ = CL$_{\text{DAT.3PL.}}$ already find.comfort.$_{\text{PST.3SG.M}}$
'But deep down he **still** found comfort in the hope <that P>'
b. #**Už** =*ju*$_i$ aj začinajú [$_{\text{IP}}$ robiť __$_i$].[7]
Already CL$_{\text{ACC.3SG.F.}}$ and begin$_{\text{PRS.3PL}}$ work$_{\text{INF}}$
'One has **already** started building *it* <the road>'.

Finally, in a number of languages some clusterizing clitics have counterparts in non-clitic expressions with the same segmental structure. E.g. in Modern Czech clusterizing enclitic pronouns in the 3 Sg. feminine (=*ji*$_{\text{ACC.3SG.F}}$, =*jí*$_{\text{GEN.3SG.F,}}$ =*jí*$_{\text{DAT.3SG.F}}$) are homonymic to non-clitic stressed pronouns in the same case, number and gender [Dimitrova-Vulchanova 1999: 111]. In Warumungu[8] this correlation is apparently extended to all personal pronouns: they are described as clitics when used clause-internally but as stressed non-clitic forms in the clause-initial position [Mushin, Simpson 2008: 585]. Old Icelandic has clause-internal deictic particles *nú* 'now' and *þá* 'then' which clusterize with pronominal and adverbial clitics [Zimmerling 2002: 368]. The

7 The Slovak examples in (2a-b) and (4) are taken from the text: I. Habaj. *Príbuzní z Ostrova*. Bratislava, 1978, 88–133.

8 An Australian language from the Pama-Nyungan family.

clause-internal clusterizing enclitics *nú*$_1$ and *þá*$_1$ had non-clusterizing clause-initial counterparts *nú*$_2$ and *þá*$_2$ that likely were non-clitic elements bearing the sentence accent [ibid.]. The same problem arises with Old Russian 1–2 p. forms of the BE-auxiliary in the present tense indicative — they are distinguished from their non-clitic counterparts merely on the basis of their syntactic position, cf. [Zaliznjak 2008; 37, 221–228].

Similar facts do not prove automatically that clusterizing clitics and their non-clusterizing counterparts with the same segmental structure are homonyms but they obviously compromise the idea that clitic clusters are just occasional sequences of prosodically homogeneous non-clusterizing clitics. I am therefore giving up the Homogeneity Condition and conclude that the parameters ‘± clitic’ and ‘± clusterizing’ are independent. I am furthermore assuming that each slot in the binary matrix on Fig. 1 may have a non-empty filling.

	A.‘+ Clitic’.	**B.‘-Clitic’.**
1. ‘- Cluster’.	+	+
2. ‘+ Cluster’.	+	CLITICOIDS

Fig. 1. Clitics and clitic clusters in world’s languages

The existence of single non-clusterizing clitics (A1) and single non-clusterizing non-clitic elements (B2) is an observable fact. The existence of clusterizing clitics (A2) can be proved formally if a language also has a non-identical set of non-clusterizing clitics and all clitics involved in clusters met all the conditions met by non-clusterizing clitics in this language. Finally, the existence of (B2) can be proved if some or all clusterizing elements do not conform to the conditions met by clitics in this language. If they combine in a cluster with standard clitics whatever the definition of a clitic is chosen, the value ‘+clitic’ is not the most general feature of the clusterizing elements. I am tagging clusters consisting of elements which violate the HC as ‘cliticoids’. Informally, cliticoids are a set of clusterizing elements which share some common value overlapping but not directly matching with the value ‘+clitic’, e. g. a value like ‘+function word’, or ‘+discourse-activated element’ or ‘+*yīn*’, ‘+*yáng*’ etc. What a linguist usually does not know beforehand is whether B2 and A2 overlap or A2 is a proper subset of the B2. Empirically-oriented research has shown that world’s languages with clusterizing elements usually allow clusters consisting of elements representing two, three or more different kinds of sentence categories, e. g. Agreement markers, Case Markers, Reflexives, Discourse Operators. Therefore, the most general value assigned to all cliticoids in all world’s languages is less likely to be found in the set of morphosyntactic features and more likely to be found in the set of communicative or prosodic features.

In order to get the diagnostic features of clusterizing clitics/cliticoids it is essential to establish the correlations of clusters vs structures where they occur. I am claiming that such correlations exist and that the distribution of clusters in world’s languages provides a key for retrieving information about syntactic domains. I also argue that the list of diagnostic features of clusters can be construed without assuming that all clusterizing elements are clitics. Moreover, it can be shown that not all sequences of adjacent clitics are clusters even if the order of the elements is fixed and such sequences obey HC.

The most salient counterexample is furnished by cases where adjacent clitics *a*, *b* belong to different syntactic categories X, Y and the fixed order a > b is straightforwardly derived from the fixed order X > Y. If X и Y are sentence categories that are placed in a fixed order [X], [Y], the clitic *a* can attach to X° only from the right (X°=a), the clitic b can attach to Y° only from the left (b=Y°), the fixed order a > b is generated automatically: $[_X$ X°=a] $[_Y$ b=Y°]. To eliminate such sequences and to keep them apart from clusters where all elements belong to one and the same syntactic domain $[_X$ X°=ab] or $[_Y$ ab=Y°], one needs a principle like (iii).

(iii) <u>The Independent Templatic Principle</u>,ITP.
If elements from the set {a,b,c…n} constitute a cluster, the order a > b for the each pair of adjacent elements (a,b) is predicted by an independent Template Rule which cannot be derived from the rules predicting the order of any pair of sentence categories X, Y, X $\notin$ {a,b,c…n}, Y $\notin$ {a,b,c…n}.

It is reasonable to impose a further condition on clusters and specify that the clusterizing elements should represent one syntactic domain.

(iv) <u>The One Domain Principle</u>, ODP.
If clitics from the set {a,b,c…n} are ordered by a Template Rule, predicting the order a > b for each pair of adjacent elements (a,b), the cluster /a,b,c…n/ cannot be divided by any categorial brackets dividing the domains of any two syntactic categories X and Y, so that one part of the cluster would belong to X, and the other one to Y: *$[_X$ …ab]$[_Y$ cd…].

We are unable to prove ODP in the strong sense, i. e. to prove that adjacent clitics *a, b* capable of taking more two or more positions in clause, *cannot* be placed in a fixed order a > b, if they belong to different domains X and Y. At the same type, ODP probably can be proven in the weak sense, i. e. for each world's language which has clusters of clause-level elements /a,b,c…n/ it can be demonstrated that the clusterizing elements belong to one domain (not two or more).

Sequences of clitics belonging to different domains may resemble clusters but are not recognized as such according to ODP. Such sequences sometimes arise in world's languages where clusterizing clitics of the matrix clause attach to the right edge of the embedded clause which may have its own clitics. This is attested, e. g. in Cavineña[9] and Slovene. Cavineña has phrase-final enclitics like =*tibu* 'because' that serve as complementizers [Guillaume 2008: 84]. In example (3) the enclitic =*tibu* belonging to the embedded clause with the verb *jipe-kware* 'approach', ends up to the left of the cluster =*pa*=*tu* belonging to the main clause predicate *pude-da* '(be) red'.

[9] A Bolivian language from the Tacanan language family.

(3) Cav. [$_{CP}$ *Tu-ra*=kamadya ijeti jipe-kware=*tibu*]# ***=pa =tu*** pude-da[10].
CL_{3ERG} only sun approach$_{PLPRF.}$ CL_{COMP} # $\boldsymbol{CL_{REP}}$ $\boldsymbol{CL_{3SG}}$ red
'Since he <the vermillion flycatcher bird> is the only one who had approached the sun in the old days, he is red/brown.'

The ODP condition has to be slightly modified for languages that allow climbing of the clusterizing clitics out of embedded clauses into the matrix clause. An example of climbing is given above in (2b), where the clitic =*ju* is generated in the embedded infinitive clause but moved to the main clause. A more complicated case is shown below in (4)

(4) Svk. [$_{TP}$ Aj ty =*by* =*si* =*sa*$_i$ mal [$_{IP}$ zodvihnúť t_i] z tej postele!].
And you$_{NOM.SG.}$ $CL_{COND.}$ CL.$_{BE.2SG.PRS}$ $CL_{REFL.ACC}$ have$_{PST.3SG.M.}$ move$_{INF}$ from that$_{DAT.SG.F}$ bed$_{DAT.SG.F}$
'It were better if you just arose from the sack!'

In the cluster =*by*=*si*=*sa* the first two clitics are linked with the main-clause verb *mal*, while the third one with the embedded-clause verb (infitinitive) *zodvihnúť*. This condition is shown schematically in (4'), where the superscripts $b^1c_i^2$ refer to syntactic heads V1 and V2 and the subscript ($_i$) refers to the base-generation position of the moved ('climbed') clitic.

(4') [$_{TP}$ …a^1 $b^1c_i^2$ °V1 [$_{IP}$ … °V2 t_i]].
The well-formedness of structures like (4') indicates that ODP must be complemented by a condition on embedding and climbing.

(v) The Condition on Embedded Domains, CED.
A cluster defined on the set {a,b,c…n}, where for each pair of adjacent elements (a, b) the fixed order a > b can be established, and elements a,b,c,d are generated in different clauses of a poly-predicate complex [$_X$ abc$_i$d$_j$ [$_Y$ t_i t_j…]], syntactically belongs to the hierarchically highest clause of this complex, if the Template Rule has slots {{$_C$ …}, {$_D$ …}} for the clitics c, d extracted from the embedded clause [$_Y$ …].

If the CED condition is met, structures with climbing like (4') do not violate the One Domain Principle, ODP. Cross-linguistically, climbing of pronominal clitics is more common, while climbing of particle clitics is a more rare option.

Some sequences of adjacent clitics belonging to different domains and violating the ODP arise not at the clause junction as in the example (3) above, but in structures where clause-level clitics adjoin to the right edge of the preceding constituent which can include phrase-level clitics. This possibility is mentioned by A. A. Zaliznjak who is analyzing examples like (5), where the bound clitic =*to* is part of the relative

[10] The example (3) is from [Guillaume 2008: 574].

marker *o-že=to* and does not belong to the same level of representation as the free clusterizing clause level clitics $=mi_{\text{DAT.1SG}}$=$esi_{\text{AUX.2SG}}$[11].

(5) O.Novg. $[_{\text{TP}}$ $[_{\text{CompP}}$ o-že=*to*] =*mi* =*esi* povedalъ].
Comp=CL_{REL} $CL_{\text{DAT.1SG.}}$ $CL_{\text{BE.AUX.2SG}}$ $tell_{\text{PST.SG.M}}$
'Since you have told me'.

In order to separate sequences with phonetically adjacent clitics of a different level from clusters consisting of elements of the same level, we add the condition (vi).

(vi) The One-Level Condition, OLC.
The Clusterizing elements must belong to one and the same level of representation. Phrase-level clitics do not clusterize with clause-level clitics.

The separation of phonetically adjacent clitics from clusters in texts on exotic or old languages may be a difficult task, but we treat it as technical problem, not a conceptual one. If a linguist has a sufficient corpus of e. g. Novgorod birch bark letters or Warlpiri texts, the OLC usually makes it possible to verify or falsify the hypothesis that the *k* is a clusterizing element, i. e. an element placed by the same Template Rule that predicts the order of clitics a, b, c from some set {a,b,c…n }, where a,b,c…n are syntactic elements of the same level. For instance, Warlpiri[12] clauses may have sequences like [=*ku*=*ju*] + [=*ka*=*rna*], as in (6a), where =*ka* and =*rna* are clusterizing clause-level clitics. Yet the first two elements scarcely belong to the clausal domain: the element ju_2 is topic marker[13] and is adjoined only to nouns and stressed pronouns, cf. $nyuntu_{\text{2SG.}}$ in (6a-b). The marker =*ku* is conventionally glossed as 'Dative', but it is again only possible on NPs, cf. the example (7), where =*ku* is supported by the predicate-level dative clitic =*rla* which is placed in the cluster after nominative and accusative enclitics, according to the Warlpiri Template Rule.

(6) Warl. a. $[_{\text{NP}}$ Nuyntu=***ku*=*ju***$_2$]=*ka* =*rna* wiri nyina $[_{\text{NP}}$ ngaju=ju_2].
You CL_{DAT} CL_{TOP} $CL_{\text{AUX.PRS}}$ $CL_{\text{1SG.NOM}}$ big sit I CL_{TOP}
'I am bigger than you'.
b. $[_{\text{NP}}$ Ngaju] =*ka*=*rna*=*ngku* nyina wiri $[_{\text{NP}}$ nyuntu=***ku*=*ju***$_2$].[14]
I $CL_{\text{AUX.PRS}}$ $CL_{\text{1SG.NOM}}$ $CL_{\text{2SG.ACC.}}$ sit big you CL_{DAT} CL_{TOP}
'the same'.

[11] The example (5) is from [Zaliznjak 1993: 286], the notation is ours — *A.Z.*

[12] An Australian language from the Pama-Nyungan family.

[13] At the synchronic level Warl. =*ju* is described as a pair of homonyms: the clusterizing pronominal 1 p. accusative clitic =*ju*, cf.[Nash 1986: 56, 59]. We mark the homonyms =ju_1 и =ju_2 with subscripts.

[14] The examples (6ab) are from [Nash 1986: 209], the notation is ours — *A.Z.*

(7) Warl. [$_{NP}$ Kurdu-ngku]=*ka* =*ju$_1$* **=*rla*** [$_{NP}$ ngaju=***ku***] paka-rni.[15]
Child-Erg. *CL*$_{AUX.PRS}$ *CL*$_{1SG.ACC}$ *CL*$_{DAT}$ I *CL*$_{DAT}$ strike-NPast
'The child is striking at me'.

Warl. =*ku*$_{DAT}$ and the topical Warl. =*ju*$_2$ in (6-b) appear to be NP-level clitics which can immediately precede the clusterizing clause-level clitics =*ka*$_{AUX.PRS}$=*rna*$_{1SG.NOM}$ due to a special parameter setting for Warlpiri: this language allows the placement of clause-level clitics after the first spelled-out clausal constituent[16]. Note that this conclusion is not based on any preliminary conventions about the clausal architecture of Warlpiri, but is prompted already by the combinatorics considered probable or improbable for the class of languages with clusters. In other words, if ITP, ODP, SED and OLC are general principles instrumental in all languages or at least in a class of world's languages with clusterizing clause-level clitics including Serbo-Croatian, Old Novgorod Russian, Slovak, Cavineña and Warlpiri, it is not necessary to learn all languages from this class in detail in order to separate adjacent clitic sequences from clusters consisting of syntactic elements of the same level and belonging to one and the same domain.

The technical difficulties with separation of adjacent clitic sequences from clusters are most salient in sentences like (3), (5), (6), (7) where clitics belonging to clusters are prosodically homogeneous with adjacent elements of a different phrase-level. At the same time, as we have shown above, clusterizing elements of the same phrase-level belonging to one and the same syntactic domain often violate HC: some of them have non-clitic counterparts with the same segmental structure and morphological marking, cf. Old Novgorod Russian clitic =*esi*$_{BE.AUX.2Sg}$~ Old Novgorod Russian ESI$_{BE.AUX.2Sg}$, others have counterparts in the set of non-clusterizing clitics (cf. SC clause-level =*me*$_{ACC.1SG}$ and SC phrase-level =*me*$_{ACC.1SG}$), or counterparts differing in the prosodic type, cf. Svk. clusterizing enclitic=*už*$_1$ with the non-clusterizing proclitic =*už*$_2$. Such deviating features are by no means characteristic of *all* clusterizing elements in the corresponding languages. This indicates that neither presence nor absence of non-clusterizing counterparts is a prerequisite for clusterization. There are numerous other examples showing the prosodic and morphologic heterogeneity of clusters consisting of syntactic elements of the same level and belonging to the same domain. E.g. clusters of clause-level clitics in Vedic Sanskrit alternated stressed and unstressed elements [Hock 1996: 215]. Template Rules in Old Novgorod Russian, Serbo-Croatian, Slovak, Cavineña, Warlpiri, Tagalog and elsewhere operate on clusterizing clause-level elements with a different number of syllables and assemble clusters consisting

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15 The example (7) is from [Nash 1986: 199], the notation is ours — *A.Z.*

16 In the terminology of [Zimmerling 2012], Warlpiri is a W$_2$-system, its closest parallel being word order systems like Serbo-Croatian and Luiseño. All these languages allow the placement of clitic clusters/clusterizing clitics both after the first phonetic word and after the first clausal constituent, but Serbo-Croatian does not have phrase-level clitics in the first constituent. Such phrase-level clitics are possible in Cavineña, but this language does not allow splitting the first multi-word clausal constituent. Old Novgorod Russian has generalized splitting of the first clausal constituent, while Slovak and Cavineña have generalized the placement of clitic clusters/clusterizing clitics after the first multi-word clausal constituent.

of both monosyllabic and polysyllabic elements. Finally, in many languages the internal order of the clusterizing elements violated the so called Categorial Principle [Kosta, Zimmerling 2012]. This principle predicts that all clusterizing clitics/cliticoids are grouped in blocks according to their taxonomic morphosyntactic category, e. g. Particle, Pronoun or Auxiliary, so that the block of particles, pronouns and auxiliaries do not intersect in the Template: strings consisting of two or more particles cannot be intervened by any auxiliaries and vice versa. This condition is shown in (vii): the capital letters A, B, C are for different categories of clusterizing clitics, the lowercase letters with indexes a^1, b^1, c^n are for particular clitics representing categories A, B, C.

(vii) The Categorial Principle: the clusterizing elements are grouped according to the taxonomic morphosyntactic category. The order of non-intersecting blocks in a clitic template embodies some hierarchy of sentence categories.
$[_{\text{CliticPhrase}}\ [_{A}\, a^1, a^2..a^n]\ [_{B}\, b^1, b^2\ldots b^n]\ [_{C}\, c^1, c^2\ldots c^n]]$.

The condition in (vii) is preserved in Template Rules of several languages including Old Novgorod Russian, where all clusterizing particles precede all clusterizing pronouns, and all clusterizing pronouns precede all clusterizing auxiliaries. It is severely violated in Tagalog, where monosyllabic clusterizing particles intervene in sequences of two or more pronouns [Billings, Konopasky 2002]. It is mildly violated in the Slovak Template Rule where clusterizing auxiliaries and pronouns are placed between two slots for particle: the leftmost slot is filled by the conditional particle *=by*, the rightmost slots are filled by the spatial particles *=tu, =tam* and discourse particle *=už*.[17]

Particle1	Auxiliaries 1–2 p.	Pronouns: Reflexive	Pronouns: Dative	Pronouns: Accusative	Pronouns: Nom.-Acc. Sg. n.	Particle2	
by	sem, $\text{si}_{\text{2SG.PRS}}$, sme, ste	sa, $\text{si}_{\text{REFL.DAT}}$	mi, ti, mu, jej, nám, vám, im	ma, ťa, ho, ju, nás, vás, ich	to	tu, tam	už
1	2	3	4	5	6	7	8

Fig. 2. Slovak Template Rule

Fig. 2 shows that 8 slots of the Template host 25 clusterizing elements representing 3 major taxonomic categories — Auxiliary, Pronoun and Particle. The slots 1,6,7,8 are filled with a single element each, while slots 2,3,4,5 are filled with sets of elements which share at least two properties — a) they do not occur simultaneously; b) they are ordered in the same way respective all other elements filling all other Template slots. This distributional restriction is a general characteristics of all Template Rules.

[17] Note that Slovak has two homographic and homophonous clusterizing clitics taking different slots in the template: the auxiliary clitic $=si_{\text{2SG.PRS}}$ and the dative reflexive clitic $=si_{\text{REFL.DAT}}$.

At the same time, the order of slots in a Template is *idiosyncratic* in the terminology of [O'Connor 2002]. The last term has a twofold load. For the first, it states that the order of slots is *language-specific*, not universal. For the second, it prompts that the order of slots is not derivable from any other rules and principles except those which exclusively pertain to the clusterizing elements, cf. the condition (iv) above, introduced in this paper as an autonomous principle, Independent Template Principle, ITP.

(viii)The Template-and-Slots-Principle, TSP.

1. The number of slots in a Template equals the number of non-overlapping subsets A,B,C..N, so that each subset consists of elements {a_1, a_2…a_n} {b_1, b_2…b_n}, which stand in a complementary distribution with each other and are ordered uniformly respective any other elements from other subsets.

2. The order of slots is idiosyncratic and cannot be derived from any other principles than ITP.

Let us now treat Template Rules like that on Fig. 2 not only as empirical generalizations based on some text corpora but also as dynamic systems whose main function is to predict the order of any two elements < *x, y* > from the strictly bounded and relatively small set of the clusterizing elements {a,b,c…n}. There are two scenarios. If *x, y* take the same slot, they stand a in complementary distribution and do not show up simultaneously. If *x, y* take different slots and may show up simultaneously[18], there are ordered in the only possible way x > y in all cases where they assume a contact position. If the clusterizing elements take a distant position and do not form a contact sequences, this requirement does not hold. That is, if *a*°, *b*°, *c*° are elements belonging to the cluster $[_{\text{CliticP}}$ <a°, b°, c°… n°>], sequences like *X=*b*° (2)=*c*° (3)= *a*° (1) are excluded if all these clitics are attached to one and the same sentence category X, but if *b*°, *c*° attach to X, while *a*° attaches to Y, sequences like X=*b*° (2)=*c*° (3) Y= *a*° (1) are possible[19]. Contrary to [Bošković 2001:21], disjoint placement of clusterizing clitics does not by itself defy the existence of clusters if the TSP is not violated and syntactic configurations with cluster splitting can be proved to be derived (in terms of a transformational grammar) from configurations without splitting. Rules triggering cluster splitting are called 'Barrier Rules' in the tradition based on [Zaliznjak 1993: 288] and [Zimmerling 2009a][20]. From the viewpoint of combinatory analysis, the difference between world's languages with and without Barriers amounts to the difference

18 The implication that elements taking the same slot are never used simultaneously is true. The inverse implication that elements taking different slots are always used simultaneously is false, cf. the counterevidence mentioned in Fn. 2.

19 The symbol '=' is used in this sentence as a marker of cliticity, not as an equals sign. The notation X=*b* reads 'clitic =b is attached to category X'.

20 It is plausible that the same mechanism — Barrier Rules — also triggers configurations with the so called late clitic placement, where the whole cluster attaches not to the first sentence category X but to some category Y to the right of X: [X]… Y = *a*° (1) =*b*° (2)=*c*° (3). Cf. [Kosta, Zimmerling 2012] and [Zimmerling 2012] for discussion.

between systems where the parameter of contact position of the clusterizing elements is relevant and systems where it is irrelevant. Empirically-oriented research has shown that most if not all previously described word order systems with clusterizing clitics have Barrier Rules. If this fact is not incidental, it hints that Barriers serve as a means preserving syntactic independence of the clusterizing elements in natural languages, since they enlarge the list of positions available for them.

If one interprets the internal ordering of clusters generated by Template Rules not in terms of slots but in terms of *blocks*, i. e. sets of slots sharing the same taxonomic category (i. e. Auxiliary vs Particle vs Pronoun or Monosyllables vs Disyllables etc) it will be evident that clusters consisting of two or more blocks tend to be heterogeneous in the sense of (i). Indeed, since the main function of a Template Rule is to predict the order of any two clusterizing elements x, y and both of them may share the same taxonomic category C, the system needs additional parameters in order to generate the fixed order $x > y$[21]. For instance, in Cebuano and Bikol[22], where clusters may consist of particles and pronouns, the main principle of internal ordering of clusters, according to [Billings, Konopasky 2002] is linked with the number-of-syllable-rule: monosyllabic elements precede disyllabic ones irrespective of their syntactic category. But if two monosyllabic particles or two monosyllabic pronouns form a cluster, the language still needs additional principles for their ordering. Therefore, a linearization algorithm for the clusterizing elements can be set as a hierarchy of different principles. I am aware of three kinds of principles used in the ordering of clitics and cliticoids, cf. fig. 3.

<table>
<tr><td rowspan="3">A. Categorial Principle. Cf. (vii) above.</td><td>B. Prosodic Principle.</td><td>C. Diachronic Principle:</td></tr>
<tr><td>B1. Number-of-syllable Rules: shorter monosyllabic elements precede longer disyllabic elements.</td><td>C1. Right-Edge Rules: new elements are added to the right edge of an already existing cluster.</td></tr>
<tr><td>B2. Alternations of accented and deaccented elements in a cluster.</td><td>C2. Left-Edge Rules: new elements are added to the left edge of an already existing cluster.</td></tr>
</table>

Fig 3. Linearization Principles in clitic clusters

21 We are not discussing situations when a word order system fails to generate the fixed order of two clusterizing elements and allows the variation x > y ~ y > x, since such situations are incompatible with the chosen definition of clusters. If one still wants to account for sporadic deviations from a Template Rule, it is possible to treat them as unstable transitional states of the system (linearization algorithm).

22 Both — Central Philippine languages from the Austronesian language family.

23 The example (5) is from [Zaliznjak 1993: 286], the notation is ours — *A.Z.*

24 Postulated for Old Novgorod Russian in [Zaliznjak 2008], [Zimmerling 2009b].

25 Presumably attested in Vedic Sanskrit, cf. [Hock 1996].

26 Postulated for Ossetic in [Belyaev 2010].

The linearization algorithms generating clusters may also be analyzed in a diachronic aspect, i. e. in their dynamics. The standard model discussed above capitalizes the situation where a Template Rule is stable, the borderline between clusterizing and non-clusterizing elements is clear-cut and new clusterizing elements do not arise, so that the Template Rule at every moment of time signals that the sets of clusterizing and non-clusterizing elements do not intersect. It is nevertheless reasonable to analyze a broader class of situations, where new clusterizing elements may come to existence. If one tries to analyze the development of Template Rules, there are three possible scenarios left.

A. <u>Pure clitics join together and start clusterizing</u>. This scenario implies that clusters always consist of clitics and obey HC. Initially, all clitics belong the set {-Cluster}, at some point t_0 some of them go over to the set {+ Cluster}.

B. <u>Pure clitics attract other elements which start clusterizing</u>. This scenario implies that existing clusters are expanded by new elements which before the moment t_0 did not belong to the set {+Clitic}. This may cause a violation of HC.

C. <u>Non-clitic elements join together and become clusterizing</u>. This scenario implies that some elements from the set {-Clitic} $\cup$ {- Cluster} at some moment t_0 simultaneously go over to the set {+Cluster}. This may cause a violation of HC if some elements from the set {+Cluster} belong to the subset {-Clitic} and other elements from the set {+Cluster} belong to the subset {+Clitic}.

In a general form, Scenario A seems least likely. It is nevertheless taken as the default option in the Minimalist Program and related theories with the HC condition for clitics. Indeed, the evolution of Template Rules is seldom ever mentioned in generative syntax, but Scenario A is what one is inevitably left with if one adopts a HC-based synchronic analysis of clusters a la [Bošković 2001] or [Franks 2008]: both authors explicitly state that clusters consist of homogeneous clitics and though Franks identifies clitics as syntactic heads (°X) while Bošković treats them as left-branching elements (XP/°X), these framework-internal subtleties do not change the basic approach[27]. Scenarios B and C can be formalized if a cluster theory gives up the HC condition.

The choice between Scenarios A vs B and C may seem an abstract issue given the incompleteness of our knowledge about the evolution of most languages. I however argue that indirect evidence about the formation of clusters can be retrieved from the frequency rates of the clusterizing elements in a text corpus if the latter meets two conditions — a) clauses with clusters are frequent; b) all clusterizing elements are represented. I am proposing the following procedure: 1) Clauses with clusterizing elements are subdivided into two subcorpora — clauses with clusters (CLUSTER) and clauses with a single clusterizing element (SINGLE). CLUSTER and SINGLE share the same set of clusterizing elements <a,b,c…n>, where a,b, c … stand for slots in a Template Rule.

[27] With nearly the same effect one can analyze clusterizing clitics as pre-syntactic elements, the so called phrasal affixes which is made e. g. in [O'Connor 2002].

2) In clauses with clusters the frequency rates are measured for each clusterizing element. 3) Average frequency values are established for each subcorpus according to the formula m/n, where *m* is the total number of clusterizing elements in a subcorpus and *n* is the total number of Template slots that can be filled simultaneously in the same type of clauses, e. g. in verbal clauses. The m/n ratio predicts average frequency rates for each clusterizing element if all elements are represented evenly in a subcorpus. 4) The probability of clusterization is measured according to the formula $C/S = k_{CL}$, where C is the total number of clusterizing elements in CLUSTER, S is the total number of clusterizing elements in SINGLE and k_{CL} is the expected ratio of clusterization given that all clitics are represented evenly in CLUSTER. 5) The ratios $C_a/S_a = k_a$, $C_b/S_{b=}\ k_b$ …$C_n/S_n=k_n$ are calculated for every clusterizing element and the deviations from k_{CL} are measured 6) Those clusterizing elements which show the positive difference $k_i > k_{CL}$ are identified as CORE elements if their frequency rates in both CLUSTER and SINGLE are significantly above the average values m_i/n_i. 7) Those clusterizing elements which have $k_j < k_{CL}$ are identified as ATTRACTED elements if their frequency rates in both CLUSTER and SINGLE are below the average values m_j/n_j and their absolute figures in CLUSTER and SINGLE are comparable. The working hypothesis is that CORE elements are more likely to have a higher frequency ratio in SINGLE, since they do not need clusterizing with other elements to be realized in a sentence. The working hypothesis concerning ATTRACTED elements is that they tend to have a higher frequency ratio in CLUSTER, since they gain support from combinations either with CORE or other non-core clusterizing elements.

The group CORE is intuitively clear and easy to measure. The group ATTRACTED is intuitively clear but difficult to define in a general form. Informally, these are new elements added to an existing cluster; they are expected to be rare and tend to have a higher frequency in CLUSTER than in SINGLE, since their occurrences in a sentence are supported by combinations with other elements. Preliminary results show that if one takes a corpus where $k_{CL} = 0{,}5$, i. e. the average frequency of a clusterizing element in SINGLE is twice as high as its frequency in CLUSTER, the ratio of an attracted element k_j may be close to 1,0, while the ratio of a core element k_i will be below than k_{CL} and may be close to 0,2. At this stage we are not ready to test the proposed procedure on large text corpora. Nevertheless it proved operational on smaller corpora, if statistics of clusters is used as an expert estimate confirming or testing linguistic hypotheses. I have preliminary results for 5 languages — Serbo-Croatian, Slovak, Macedonian, Old Novgorod Russian and Kashibo-Kakataibo: in all cases the contrast of CORE and ATTRACTED groups is salient, though every language selects different elements as CORE: in Serbo-Croatian it is auxiliary clitics, in Slovak — reflexives, in Macedonian and Old Novgorod Russian — accusative clitics, in Kashibo-Kakataibo — discourse markers indicating conversational vs narrative register.

In the final section of this paper I am showing the results for a Modern Slovak prosaic narrative fiction text[28] with a total number of 826 clauses with clusterizing elements. 298 clusterizing elements come up in 135 clauses from CLUSTER, 691 elements come up in SINGLE. The Slovak Template Rule is shown above on Fig. 2, it has

[28] I. Habaj. 'Stopy v snehu'. In: I. Habaj. *Príbuzní z Ostrova*. Bratislava, 1978, 88–133.

8 slots hosting 25 elements. The maximum length of a cluster (measured in elements) in the corpus is 4, the normal length is 2. Clitics from all slots freely combine in verbal clauses. The ratio K_{CL} for all elements = 0,431. The expected average value for the elements from CLUSTER: 298: 8 = 37, 25. The expected average value for the elements from SINGLE: 691: 8 = 86,375. In order to get more exact results for the slot 3 elements which have the highest absolute frequencies in CLUSTER and SINGLE separate ratios were calculated for the accusative reflexive =*sa* and dative reflexive =si_2 which stand in complementary distribution. This has not been done for other elements standing in a complementary distribution to elements from the same slot: such elements are also found in slots 2 (auxiliaries), 4 (dative pronouns), 5 (accusative pronouns) and 7 (spatial particles), see fig. 2 above.

	1	2	3	4	5	6	7	8
CLUSTER 298	34	27	$80{:}11_{Si}$ $+69_{Sa}$	70	44	14	10	19
SINGLE 691	5	21	$441{:}99_{Si}$ $+342_{Sa}$	84	102	12	8	18
K_{CL}=0,431	K_{by}=6,8	K_{Aux1}=1,285	K_{Refl}=0,181 K_{Si}=0,111 K_{Sa}=0,201	K_{Dat}=0,833	K_{Acc}=0,431	K_{To}=1,166	K_7=1,25	$K_{už}$=1,055

Fig. 4. The clusterizing ratios for Slovak

The results confirm the hypothesis that the CORE elements are in slot 3, notably the accusative reflexive =*sa*: there are 342 occurrences of =*sa* in SINGLE which is almost four times higher than the expected average and 69 occurrences of =*sa* in CLUSTER which is 1,85 times higher than the expected average. The low clusterizing ratio 69/242 = 0,201 confirms that =*sa* is a CORE element: its frequency in CLUSTER is decreased relative to its frequency in SINGLE. The accusative clitics from slot 5 are CORE elements too: the figures are similar though the absolute values are more modest and the clusterization ratio is higher: 44/102 = 0,431. Incidentally, the ratio K_{Acc} and the overall clusterization ratio K_{CL} coincide. Elements from slots 1 (conditional particle =*by*), 2 (auxiliaries), 6 (nominative-accusative pronoun SG.N), 7 (spatial particles), 8 (discourse particle =*už*) are clear examples of ATTRACTED: they all have a frequency in CLUSTER below the expected average (37,25), while their frequency in SINGLE is considerably lower. This leads to high clusterization ratios ranging from $K_{už}$=1,055 to K_{by}=6,8. The abnormally low frequency of =*by* in SINGLE (5 examples) may well be a special feature of the chosen corpus or a special feature of Slovak syntax but the contrast in clusterization ratios of CORE elements (0,201–0,431) and ATTRACTED elements from slots 2,6,7,8 (1,055–1,285) is probably a general feature of all clusters with consisting of CORE and non-core elements. Finally, elements from slot 4 (dative pronouns) with the ratio 0,833 have an intermediate status. On the one hand, they are frequent in CLUSTER (70 examples which is 1,879 times higher than the expected average), on the other hand their frequency in SINGLE (84 examples) is near the expected average. This indicates that dative pronouns from slot 4 gain frequency in CLUSTER which is typical for ATTRACTED elements.

These statistical results do not contradict linguistic analysis of Slovak data. It is plausible that ATTRACTED elements from slots 6,7,8 represent the most recent layer of the clusterizing elements. The conditional marker =*by* (slot 1) is made part of a cluster later than dative and accusative pronominal clitics which were clusterized already in the Common Slavic period, cf. [Kosta, Zimmerling 2012] for the discussion of details. The auxiliary clitics from slot 2 have a longer clusteriziation history than =*by* from slot 1, but they get a slot in a Template Rule after the disintegration of the Common Slavic period[29]. Linguistic considerations prompt that dative (slot 4) and accusative clitic pronouns (slot 5) are both old and classify as CORE elements. The deviating features of the dative clitic pronouns in the corpus, notably their high clusterization ratio (0,833), may be due to the fact that dative clitics are regularly used by ditransitive verbs which also have a valency for an accusative object, while the verbs governing a sole accusative object (102 examples) are more frequent than the verbs/predicates governing a sole dative argument (84 examples). The unusually high frequency of reflexive markers (slot 3) in SINGLE is not directly linked with their clusterization history, since reflexive markers get a special slot in Template Rules later than pronominal clitics[30]. At the same time, it may be due to a combination of three factors: 1) the list of Slovak reflexive predicates is large; 2) Slovak allows climbing out of embedded clauses, cf. examples (2b), (4a); 3) In the absence of overt 3 p. BE-auxiliaries, Svk. =*sa* and =si_2 often turn to be the leftmost functional word in a cluster and take over the function of personal agreement markers, since the combination of a zero copula and a reflexive marker $\varnothing_{BE}$ + sa/si_2 signals that the clausal predicate is used in the 3 p.[31]

Conclusions and perspectives.

We have proposed a syntax-oriented model of clusters and processes of clusterization which has minimal or no recourse to prosody/phonetic manifestation of the

[29] Slavic present tense indicative forms of BE-auxiliary take different positions in Template Rules in East, West and Balcanic Slavic type. In the West Slavic areal type the 1–3 p. BE-auxiliaries precede the block of clitic pronouns. In [Kosta, Zimmerling 2012] this position is tagged AUX1: [$_{ClP}$…AUX 1 [PRON]…].In the Old Novgorod/East Slavic areal type 1–2 p. BE-auxiliaries are placed after the block of clitic pronouns. This position is tagged AUX2 in [Kosta, Zimmerling, 2012]: [$_{ClP}$… [PRON] AUX2].In the Balcanic Slavic type all present tense indicative forms of BE-auxiliary, except for 3 Sg. =*je*, take AUX1, while =*je* takes AUX2: [$_{ClP}$…AUX1 [PRON] AUX2]. Slovak falls in the West Slavic areal type of the Template Rule, with one deviation: it lacks overt 3 p. present tense indicative BE-auxiliaries in the verbal clauses. This is an East Slavic feature shared by Slovak and Polish, while Czech, Upper Sorbian and Lower Sorbian show the West Slavic areal type in the canonical form, since they preserve overt 3 p. present tense indicative BE-auxiliaries in all clauses.

[30] In the West Slavic areal type of Template Rules reflexive markers precede the block of dative and accusative clitic pronouns: [$_{ClP}$… [$_{PRON}$ Refl [$_{ARG}$ Dat + Acc]]…]. In the Balcanic Slavic areal type reflexive markers normally stand after the block of dative and accusative clitics: [$_{ClP}$… [$_{PRON}$ [$_{ARG}$ Dat + Acc] Refl]…]. East Slavic languages do not show a uniform pattern.

[31] The Svk. conditional particle =*by* which takes the leftmost element in the Template Rule cannot serve as an personal agreement marker since it freely combines with the present tense indicative BE-auxiliaries in all persons.

clusterizing elements. Aprioristic assumptions that all clusterizing elements are clitics and that clusterizing and non-clusterizing clitics represent the same set of elements have been rejected. Clusters are formed according to Template Rules that are independent from other rules of ordering and arrange elements in an idiosyncratic order. This condition has been introduced as the ITP principle. Clusterizing elements should belong to the same domain and level representation and cannot belong to two or more independent syntactic domains. These conditions have been introduced as principles ODP, CED and OLP. The Template structure can be analyzed in terms of slots and in terms of blocks of slots sharing the same taxonomic category. The Template-and-Slot Principle (TSP) predicts that the number of slots in a Template equals the number of non-overlapping subsets A,B,C…N, so that each subset consists of elements a_1, a_2… a_n which stand in a complementary distribution with each other and are ordered uniformly respective any other elements from other subsets. Clusters meeting the ITP, ODP, CED, OLC and TSP conditions may consist of heterogeneous elements, some of which have non-clitic correlates. At the same time, adjacent clitic sequences which violate IPT, ODP, CED, OLC and TSP, often meet the homogeneity condition, HC. The HC condition is incompatible with the analysis of Template Rules in terms of blocks, since the linearization algorithms which assemble clusters need a hierarchy of parameters, not a single parameter. The Template Rules can also be analyzed in a dynamic aspect. The preliminary results indicate that clusters typically consist of CORE and ATTRACTED elements: both groups have their characteristic statistical profiles that can be retrieved by synchronic analysis. The CORE elements are older and/or functionally more prominent elements that have frequency rates significantly above the average and a higher frequency in the subcorpus SINGLE (i. e. single clusterizing elements). The ATTRACTED elements are newer elements that have frequency rates below the average and a higher frequency in the subcorpus CLUSTER (i. e. clusters of two and more elements). The proposed procedure of identifying CORE and ATTRACTED elements on the basis of their statistical profiles may complement linguistic analysis of clusters.

The ITP, ODP, CED, OLC and TSP conditions can be build in the syntactic modules of a linguistic processor: in this case parsing of clusters can be done automatically. The hypothesis that a sequence as <x,y, u, w> is a cluster will lead to further hypotheses about the syntactic domains of x, y, u, w: these hypotheses can be checked by using filters based on ODP, CED, OLC, while the ITP and TSP conditions help checking the internal ordering of clusters. The model of Templates presented in this paper is backed empirically by data from a large class of world's languages with clusterizing clause-level elements. At the same time, real usage may deviate from the model and show the fluctuation *a, b ~ b,a* where the model predicts a fixed order. Here a theorist must separate a) bad usage from b) bad descriptions of data and c) transitional stages of a word order system. *Bad usage* (and bad introspection) can be ignored unless it is covered by names of authority or reflected by *bad descriptions* of some circulation. *Transitional stages* of word order system have to be subdivided into two cases: c1) minor fluctuations in selected pairs of elements {*a, b*} reflect a transition from Template Rule 1 to Template Rule 2 which may differ in number and order of slots; c2) major fluctuations in most pairs {*a, b*} reflect a *type shift* and may indicate that a language changes its word order system, cf. [Zimmerling 2012].

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