

ПРОБЛЕМА НЕДИСКРЕТНОСТИ И СТРУКТУРА УСТНОГО ДИСКУРСА

Кибрик А. А. (aakibrik@gmail.com)

Институт языкознания РАН;
МГУ им. М. В. Ломоносова, Москва, Россия

THE PROBLEM OF NON-DISCRETENESS AND SPOKEN DISCOURSE STRUCTURE¹

Kibrik A. A. (aakibrik@gmail.com)

Institute of Linguistics RAS;
Lomonosov Moscow State University, Moscow, Russia

Language consists of units of various hierarchical levels, but the boundaries between the units are not always crisp, and non-discrete effect are observed. That applies not only to syntagmatic structure, but also to paradigmatics, diachrony, and even whole languages. Non-discreteness is a common property of language and cognition. In contrast to conventional discrete and continuous structures, I propose another kind of structure that can be called focal. Focal phenomena are simultaneously distinct and related. It is necessary to recognize focal structure as one of the major types of structures typical of natural language. Non-discrete effects can be observed at the level of discourse. Spoken discourse consists of elementary discourse units (EDUs), identifiable with the help of a set of behavioral criteria. Along with prototypical clausal EDUs, there are deviant EDUs of various kinds. Parcellated elaborations constitute an example of a paradigmatic outlier among the EDUs. Non-discrete boundaries between EDUs are an illustration of syntagmatic difficulties in EDU identification. Phonemes, EDUs, and other units are not as crisp and clean as our digital mind would want them to be. In order to address linguistic reality in its actual complexity, we have to recognize that segmentation follows the principles of focal structure, which is the general property of language and cognition.

Key words: discreteness, non-discreteness, theory of language, discourse structure

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1. Non-discreteness in language and focal structure

Linguists tend to think about language as a system of discrete, segmental units (phonemes, morphemes, words, sentences...). But this view, in its pure form, does not survive an encounter with reality. For example, phoneticians are well aware of the phenomenon of coarticulation. To take a random example, Engwall (2000) demonstrated in an articulo-graphic study that the pronunciation of Swedish fricative consonants is strongly affected by the surrounding vowels. In particular, the context of labial vowels strongly increases lip protrusion, while the context of the front vowel /i/, compared to back vowels, leads to a more anterior position of the tongue (Engwall 2000: 10). These kinds of facts, common in phonetic syntagmatic structure, indicate that speakers, when pronouncing a phoneme, simultaneously pronounce a neighboring phoneme. Boundaries between segments are not always segmental, and trying to posit boundaries in the signal inevitably means a kind of digitization.

In Kibrik 2012a, 2013 I demonstrate that similar kinds of phenomena occur at various syntagmatic levels of language, including sequences of morphemes, words, phrases, etc. Non-discrete effects occur in paradigmatics as well. For instance, Russian may be claimed to have a marginal phoneme /w/, e.g. in rendering English names such as *William* or English borrowings such as *wow*. In fact, in paradigmatics, and especially in semantic paradigmatics, non-discrete effects have been subject to substantial theoretical consideration, cf. Wittgenstein 1953/2001, Labov 1973, Rosch 1973, Lakoff 1987, Zaliznjak 2006, Janda 2015, among others. Of course, if one turns to the diachronic dimension of language, non-discrete phenomena abound here as well. For example, the English *weed* in the idiomatic expression *widow's weed* 'a widow's mourning clothes' can be historically connected to two Old English sources: *wēod* 'plant' and *wæd(e)* 'garment' (Hock and Joseph 1996: 237–238). Moving from particular linguistic elements to whole languages, we again encounter non-discrete effects. Cienki (2015) argues that the notion of language in general is a prototype-like category. Particular human languages resist discrete identification both synchronically (the language/dialect problem) and diachronically. Is there a discrete boundary between Russian and Belorussian, or between Old Russian and Russian? Linguists often underestimate non-discrete effects at the level of whole languages. Questioning the validity and integrity of the notion of Common Nordic, Dahl wittily remarks that authors sometimes seem to assume that the Scandinavians "changed their language all at the same time and in the same fashion, as if conforming to a EU regulation on the length of cucumbers" (2001: 227). Of course, the problem of language boundaries is further affected by language contact, blurring the classical crisp family tree model; to cite just one example, Trudgill (2011: 56–58) demonstrates how Scandinavian languages were affected by Low German. Non-discrete effects are not limited to language only but extend to cognition in general. For example, Alexandrov and Sergienko (2003) suggest that psychophysiological experiments prove the non-disjunctive character of mind and behavior; "continuity is the overarching principle in the organization of living things at various levels" (2003: 105). Van Deemter (2010) provides a book-long account of various vagueness-related effects in language and cognition.

Summarizing what has been said so far, language (as well as cognition in general) simultaneously longs for discrete, segmented structure and tries to avoid it. The

omnipresence of non-discrete effects has not yet led to proper recognition in the mainstream linguistic thinking. In fact, linguists are often bashful about non-discreteness. But non-discreteness is not just a nuisance that can be somehow avoided. Non-discrete effects permeate every single aspect of language, and this problem is in the core of theoretical debates about language. Main reactions to this problem can be generally grouped into two types. First, there is a strong tradition of what can be called “digital” linguistics, ignoring non-discrete phenomena or dismissing them as minor. This tradition is associated with Ferdinand de Saussure’s motto that language only consists of identities and differences. This tradition has an appeal of scientific rigor but suffers from strong reductionism. In contrast, there is a tradition of inclusive, or “analog”, linguistics. This tradition is more realistic but often boils down to a mere statement of continuous boundaries and countless intermediate/borderline cases. I propose that in the case of language we see a special kind of structure that combines the properties of discrete and non-discrete and can be dubbed **focal** structure. Focal phenomena are simultaneously distinct and related. One should not be forced to choose between discrete and continuous structure as the only two available options. This kind of sharp opposition is sometimes proposed by the advocates of the strictly discrete approach, e.g. by Goddard (2011: 233) in his attempt to defend the discrete character of meaning by dismissing the idea of a continuum or merging.

Focal structure is the hallmark of linguistic and, more generally, cognitive phenomena, in contrast to simpler kinds of matter. Focal structure, as well as two other kinds of structure, are represented on Fig. 1. In fact, focal structure can be viewed as the underlying type of structure, discrete and continuous structures being special cases.

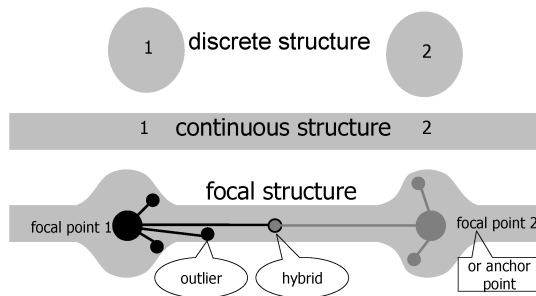


Fig. 1. Various kinds of structures

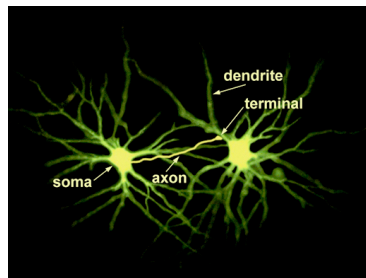


Fig. 2. Neuronal structure with synapses

A possible analogy to focal structure is observed in the neuronal network that serves as the brain substrate of language and cognition, see Fig. 2. This may be more than a mere analogy; the similarity is too obvious to be purely coincidental. At a higher level of brain organization, there is accumulating evidence that neuronal minicolumns may be arranged in two different ways: widely spaced minicolumns, primarily in the left hemisphere, function as discrete units, whereas narrow spacing of minicolumns, mostly in the right hemisphere, is responsible for holistic processing; moreover, the two streams of processing may occur in parallel due to the connection via corpus callosum (see Chance 2014 for a review).

Why are linguists, definitely aware of the non-discrete effects, so much inclined to ignore them? The answer is probably related to the well known Kant's problem. In his "Critique of Pure Reason" Kant suggested that the observer, or cognizer, crucially affects the knowledge of the world: "The schematism by which our understanding deals with the phenomenal world <...> is a skill so deeply hidden in the human soul that we shall hardly guess the secret trick that Nature here employs." The human analytical mind is digital, and it wants its object of observation to be digital as well. We clearly face here what Dawkins (2011) called "the tyranny of the discontinuous mind". This may be partly because of the scientific tradition based on segmentation and categorization (Aristotelian, "rational", "left-hemispheric", etc.).

2. Segments of talk: Elementary discourse units

What can be done to mend the situation, that is to move towards a more realistic approach to language? We need to develop a more embracing linguistics and cognitive science that address non-discrete phenomena not as exceptions or periphery of language and cognition but rather as their core. In Kibrik 2012a, 2013 I proposed two possible avenues that can help to reach this goal. First, to somewhat shift the primary object of investigation: concentrate on those linguistic phenomena that are less burdened with the tradition of discrete analysis. Second, to entertain new types of models and, possibly, new mathematics, appropriate for the "cognitive matter". In the rest of this paper I make some steps along the first avenue, discussing non-discrete effects in spoken discourse.

In addition to the traditional hierarchical levels of language, including phonetics, morphology, and syntax, there is a further level of discourse. I have reviewed above the non-discrete effects found at the traditional levels of language. Let us consider the level of discourse, in particular spoken discourse, which is a relatively new object of study in linguistics. I begin with the instances in which spoken discourse displays a kind of segmented structure and proceed with discussing non-discrete and focal effects in the following two sections.

As in other hierarchical levels of language, one can identify discourse segments—intonation units (Chafe 1994) or elementary discourse units (EDUs, Kibrik and Podlesskaya eds. 2009). As many other procedures in the analysis of human behavior, segmentation into EDUs is based on expert assessment and cannot be fully formalized. EDUs are identified by trained experts with the help of a set of behavioral criteria, associated

with the speaker's patterns or vocalization and prosody: pausing, tempo, loudness, intonation, and accent placement. Thus identified EDUs display a remarkable correlation with independently established semantic and syntactic units, that is clauses. See Table 1 for the data from several languages, explored from this perspective.

Table 1. Share of clausal EDUs in various languages

Language	Percentage of clausal EDUs
English (Chafe 1994)	60.0%
Mandarin (Iwasaki and Tao 1993)	39.8%
Sasak (Wouk 2008)	51.7%
Japanese (Matsumoto 2003)	68.0%
Russian (Kibrik and Podlesskaya eds. 2009)	68.6%
Upper Kuskokwim (Kibrik 2012b)	70.8%

Differences across the numerical results for various languages, shown in Table 1, may be partly due to differences between the languages, but also to differences between the explored discourse types, as well as differences between the specific procedures of EDU and clause identification.

Let me provide one short English example consisting of two clausal EDUs and illustrating the basic generalization. (All examples cited in this paper are taken from text SBC032 of the Santa Barbara corpus of spoken American English, see <http://www.linguistics.ucsb.edu/research/santa-barbara-corpus>. Transcription conventions are the same as we use for Russian discourse, see <http://spokencorpora.ru/showtranshelp.py>.)

- (1) 60.57 45 ●●●(3.38) And /then I was /f-fforced \out,
 65.84 46 ●●(0.07) because I /failed a /promotion to /\commander!

In terms of focal structure introduced above, clausal EDUs in (1) illustrate focal points, that is canonical instances.

3. Parcellation

Apart from canonical EDUs that coincide with clauses, there are also some noticeable classes of other EDUs that are not. Among these one of the common groups (11.8% of all EDUs in the Russian corpus explored in Kibrik and Podlesskaya eds. 2009) are retrospective subclausal EDUs—mostly adjuncts or attributes that semantically belong to a clause but constitute a separate short EDU following the base clause and elaborating it semantically. Consider example (2).

- (2) 22.86 12 ●●●(1.00) /My friend stood up /behind his \desk,
 26.00 13 ●●(0.15) in his /\fu-ull \f-four \-stripes,
 28.05 14 and \said:

Syntactically, EDU #13 in this example constitutes an adjunct to the clause in EDU #12, but prosodically it is clearly a separate unit. In Kibrik and Podlesskaya 2009 eds. we called this kind of retrospective subclausal EDU a **parcellation**. It emerges for the reason that the speaker has planned a clause containing too much new information, thus violating Chafe's (1994) one new idea constraint. In such situations the speaker typically chunks a clause into two pieces, conveying the adjunct as a parcellated EDU. Syntagmatically, parcellated elaborations are quite typical EDUs. But paradigmatically they present one of the most typical kinds of outliers in the segmental discourse structure.

4. Non-discrete boundaries

As was pointed out above, transcription of spoken discourse is a matter of expert judgement. That includes segmentation of the flow of talk into EDUs. An experienced transcriber takes into account all the relevant criteria and posits EDU boundaries. If two or more transcribers, working in the same fixed framework and having a comparable level of experience, analyze the same sample of talk, the instances of divergence are few. However, some divergences occur. Moreover, divergence may happen in the mind of a single transcriber as well; in other words, s/he may have doubts on whether a boundary must be posited or not, for the reason that the criteria of EDU identification are not fully consistent with each other. This happens in line #2 of example (3).

(3)	0.59	1	When I came /b <u>a</u> ck,
	1.39	2	from one of those əə(0.26) ●●(0.14) \trips from down tə-ə əə(0.27) ●●(0.10) /-Cartag <u>e</u> na,

Line #2 as a whole is a parcellated elaboration on the base clause found in line #1. However, line #2 includes symbol | that indicates the location of transcriber's doubts. The fragment from one of those əə(0.26) ●●(0.14) \trips can be considered separately, and in such case can be taken as a fully-fledged EDU with the primary EDU accent on \trips. Under such interpretation, the subsequent fragment from down tə-ə əə(0.27) ●●(0.10) /-Cartagena, can be interpreted as a separate EDU, functioning as a parcellated attribute of the preceding EDU. On the other hand, the fragment from down tə-ə əə(0.27) ●●(0.10) /-Cartagena, is vocalized as if it were an immediate continuation of the preceding fragment: there is no pause, there is no reset of intonation contour at the beginning, and the accent on /-Cartagena sounds as a good candidate for a primary accent of the whole construction. This combination of considerations leads to the interpretation shown in (3): the whole construction is treated as a single EDU, but with a tentative boundary in the middle. It is important to emphasize that is not merely an issue of representation and not just a transcriber's difficulty. Rather, by providing the transcription shown in (3) we are faithful to the equivocal vocalization employed by the speaker himself. It is not just the transcriber who has doubts about positing boundaries; it was the the speaker who hesitated on whether to end his EDU on the word \trips or elaborate it further. The EDU in line #2 is thus a syntagmatic hybrid of two potentially independent EDUs.

Consider another example.

- (4) 54.79 44 ●●●(2.12) | /stayed in the /US –Navy † ↓\s-seventeen \ years and ten \months.

Line #44 shown in this example sounds as having far too many accents for a single EDU. Also, if one considers the fragment ●●●(2.12) | /stayed in the /US –Navy by itself, it sounds as a self-sufficient EDU with the primary accent on the word –Navy. However, it must be taken into account that the speaker talks with emphasis (especially on ↓\s-seventeen) and uses a kind of scanning prosody (almost word-by-word accenting), which is the reason for the multiplicity of accents. In addition, the sequence –Navy † ↓\s-seventeen is vocalized without a slightest pause and with clearly continuous intonation. So, overall, the decision is made to transcribe the whole clause as a single EDU with a shadowy boundary in the middle.

Instances of non-discrete EDU boundaries are not overwhelming in spoken discourse, but they are not too rare either (perhaps one instance out of 10 or 15 EDUs). So the issue of non-discrete boundaries in speech are hardly negligible. We find that non-discrete effects, already familiar from other levels of language, are also characteristic of the discourse level, both syntagmatically and paradigmatically.

5. Conclusion

The discovery of discourse segmentation by a number of independent researchers several decades ago demonstrated that the level of discourse has units, just as any other level. However, analytic difficulties associated with EDU identification may lead some to believe that discourse is not as segmented as other levels. That would be a misguided conclusion. Non-discrete effects occur at various levels of language, including phonetics, morphology, and syntax. To quote from Edward Sapir, “unfortunately, or luckily, no language is tyrannically consistent. All grammars leak.” (Sapir 1921: 38). The level of discourse structure is not exempt from non-discreteness either: we have seen examples of paradigmatic and syntagmatic deviations from the focal, or prototypical, EDUs. The existence of non-discrete effects in discourse segmentation does not undermine the very idea of segmentation, just as coarticulation does not imply that phonemes do not exist. Rather, phonemes, EDUs, and other units are not as crisp and clean as our digital mind would want them to be. In order to address linguistic reality in its actual complexity, we have to recognize that segmentation follows the principles of focal structure, which is the general property of language and cognition.

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