PROSODY AND LOCAL DISCOURSE STRUCTURE IN A POLYSYNTHETIC LANGUAGE

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As has been known since at least Chafe 1994, spoken language is produced in spurts, or quanta, or **elementary discourse units** (EDUs; see Kibrik and Podlesskaya 2009). EDUs are identified on the basis of prosodic criteria, such as tempo, loudness, intonation contours, pitch accents, and pausing. Cognitively, EDUs correspond to foci of consciousness (Chafe 1994).

Local discourse structure, consisting of EDUs, has been studied in a number of languages. In this paper I apply this approach to a polysynthetic language of Alaska, North America, called Upper Kuskokwim Athabaskan (UKA). Polysynthetic languages are those in which morphological complexity of the verb substantially exceeds cross-linguistic average. Much of what is encoded by function words of nominal morphology in other languages, is encoded in verbs of polysynthetic languages. As a result, polysynthetic verbs often consist of lengthy sequences of morphemes. One typical aspect of polysynthetic languages is that clause arguments are encoded by pronominal affixes inside the verb. Whereas in a language like English the clause *She saw him* consists of three words, in a polysynthetic language it would be one word that can be schematically represented as *she-him-saw*. It is an interesting research question how these grammatical peculiarities relate to local discourse structure.

This study is based on a corpus of UKA discourses including several genres, such as personal stories, folk stories, conversations, interviews, etc. The overall length of UKA talk that was transcribed and served as the basis for this study is 3 hours 20 minutes.

The corpus of discourses has been divided into EDUs. This procedure did not meet with major difficulties. The familiar set of prosodic criteria (see above) worked for UKA successfully. For example, in the EDU shown in (1) the beginning of the clause (the noun) was pronounced by the speaker with the pace of 240 ms per syllable, and in the final part of the clause (the verb and the ensuing particle) the pace is 450 ms per syllable.

(1) sighwdla' todoltsitł' ts'e' 'My sled broke through ice'
 my.sled fell.through Particle

The validity of the familiar prosodic criteria is an important finding, because the technique of EDU identification was developed on the basis of European languages, whereas UKA is typologically as different from those as one can get. Therefore, it appears that EDUs constitute a basic building block of the on-line cognitive process of discourse production, independent of grammatical properties of individual languages. The number of EDUs obtained in the segmentation procedure is 965.

As is well known (Chafe 1994), EDUs generally tend to coincide with clauses. In UKA, the percentage of such coincidence is somewhat higher than in other languages studied so far, but it is within the same range. Table 1 shows the percentage of clausal EDUs in UKA in comparison with a number of other languages. The vast majority (84%) of UKA clausal EDUs are headed by an inflected verb, such as in (1). Much rarer are clauses headed by a verb of being (6%) or clauses lacking a verb at all (10%).

Apart from the bulk of canonical clausal EDUs, there are two kinds of deviations:
• short EDUs – those that are smaller in their propositional content than a clause (14.8%)
• long EDUs – those that contain more than one predicative element and thus are larger than a clause (14.4%).

Short EDUs further fall into several classes, as in other languages:
• regulatory: consisting of a discourse marker, such as a connector or an epistemic particle
• fragmentary: EDU that was started but not completed (false start)

Language	Percentage of clausal EDUs
English (Chafe 1994)	60%
Mandarin (Iwasaki and Tao 1993)	39.8%
Sasak (Wouk 2008)	51.7%
Japanese (Matsumoto 2000)	68%
Russian (Kibrik and Podlesskaya 2009)	67.7%
Upper Kuskokwim Athabaskan	70.8%

Table 1. Proportion of clausal EDUs in Upper Kuskokwim Athabaskan and other languages

• subclausal: prospective or retrospective increments, semantically belonging to a clause but prosodically isolated into a separate EDU; see example (2).

(2) yats'ese   di'isdiyok   dine   k'inodle ghoda
    that's.why it.happened.to.me that time icon   because.of
    'That is why that happened to me then because of the icon'

Long EDUs primarily consist of combinations of a matrix clause and a complement:

(3) hondenh ghwla' sidadza' yinezinh   ts'e'
    where   unknown my.sister he.is.thinking Particle
    'Where is my sister, he was thinking'

Much rarer are concatenations of coordinate clauses within one EDU, or relative clause constructions.

Generally, the stratification of EDUs in UKA is quite typical, judging by the data we have from better studied languages. Probably the most surprising fact is the equifrequency of short and long EDUs. For comparison, in the Russian corpus studied in Kibrik and Podlesskaya 2009, short EDUs strongly outnumber long EDUs: 26% vs. 6.3%. Most likely, this peculiarity of UKA is related to its polysynthetic character. If measured in the number of words, EDUs in a polysynthetic language are shorter: more information is packed in the inflected verb. As a result, more additional lexical elements fit inside an EDU. There are fewer regulatory and subclausal elements finding themselves outside an EDU, and more than one verb more often fits inside an EDU.

The profile of a language in the domain of local discourse structure thus depends on two major factors: first, the universal, cognitively based requirements on discourse segmentation, and second, language-specific grammatical peculiarities of the language.

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NON-DISCRETE EFFECTS IN LANGUAGE, OR THE CRITIQUE OF PURE REASON 2

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Language is a hierarchical system. At each hierarchical level (phonology, grammar, discourse) units display a paradoxical behavior. They are segmental, and at the same time they somehow tend to avoid segmentation and merge. This can be seen in both paradigmatic and syntagmatic aspects. Consider the phonemic level. Paradigmatically, each language is typically believed to have a fixed set of phonemes. But all kinds of partial membership in this set are systematically found across languages, e.g. it is unclear whether one must posit the difference between hard and soft /k/ and /k'/ in Russian. Syntagmatically, it is difficult to draw a clear boundary between segments in phonetic signal. For example, when pronouncing something like /ko/ labialization is found already when the consonant is pronounced.

In grammar, the neat distinction between words and affixes is hard to be drawn in any language. Elements such as English *the* or *to* are words by some criteria, and parts of larger words by other criteria. Linguists typically attempt to solve this problem by introducing an intermediate class of elements: "clitics". But this actually complicates the problem even more, as now one has to draw two boundaries: between words and clitics and between clitics and affixes. At the level of discourse structure,