Pragmatic Aspects of English for Engineering

Milena Krhutova
Brno University of Technology, Faculty of Electrical Engineering and Communication,
Udolni 53, 620 00 Brno, Czech Republic
krhutova@feec.vutbr.cz

Abstract - **The contribution deals with meaning in the pragmatic sense and the way of its decoding. It is focused on pragmatic categories of discourse used in engineering i.e. English of science and technology. The author analyses the necessary presuppositions for a coherent scientific and technical text. She defines the qualities of a coherent text and how they are achieved by students of engineering whose native language is not English but who use it as their second and professional language. The theory of shemata is commented and their role in comprehension of a specific professional text. The author tries to trace how the meaning in scientific and technical texts is conveyed beyond the language system. She also defines the role of cohesion, a linguistic feature in texts on engineering. The conclusion of the author´s investigations is that teaching the system of language only is not sufficient enough because students need to learn how to grasp the pragmatic meaning of texts and this is not a part of language itself but is based on additional qualities which facilitate proper comprehension. The most important presupposition of proper comprehension in professional language of engineering is the knowledge of the subject of engineering as such.**

Index Terms – cooperative principle, pragmatic meaning, professional language, schemata of world

INTRODUCTION

Teaching language to future engineers brings about specific aspects of their professional language, its qualities and typical features. Teaching English to advanced learners who are at the same time well instructed in engineering brings about even more specific aspects of language which can sometimes be even extralinguistic. This is the case of pragmatic meaning which is not hold by the language itself but by extralinguistic means as social and professional contexts are. This category is connected with socio-cultural studies when the general language is concerned but the professional language of engineering is connected with engineering as a specific profession and its specific knowledge. This knowledge plays an important role in comprehension of texts on engineering and supports decoding of conveyed message. Relying on their knowledge of profession, students of engineering and experts in various engineering branches are able to understand English texts of high level specificity even when they are not native speakers, nor advanced foreign users. It is of great importance for students of engineering to be aware of the process of perceiving English as their second and professional language. Pragmatic approach can facilitate their cognitive learning using their engineering knowledge as a supportive element in comprehension.

PRAGMATIC MEANING

A convenient explanation of the pragmatic meaning has been recently articulated by Widdowson. He explains the pragmatic meaning as "…matching up the linguistic elements of the code with the schematic elements of the context" (2000:63). By schematic elements, or schema, he means conventional imprints of the world that people have established in their minds as patterns of reality. Such schematic elements are referred to in communication and, with their help the pragmatic meaning is achieved in speech acts. Together with reference, the utterance also has its illocutionary force, which means that the producer communicates his or her utterances with the aim to perform some illocutionary act. Such an illocution has some kind of an effect on the receiver, i.e. it has its perlocutionary effect. Reference, illocutionary force and perlocutionary effect are aspects of pragmatic meaning and are not inherent in the language itself. As the receiver of an illocution may eliminate some circumstantial information as irrelevant, ambiguity in pragmatic meaning is no exception. So…"interpretation commonly involves the parties concerned in the negotiation of meaning" (Widdowson, 2000:65).

Another interesting view, which I am especially interested in, is the view of pragmatic meaning expressed by Crystal in *Language and the Internet* (2001). Crystal, a renowned expert in the field of style, analyses the pragmatic meaning as opposed to the semantic meaning. "The 'meaning' of a message is much more than the semantic content of its constituent words" (2001: 121).

It is evident that the pragmatic approach to text analysis involves contextual considerations which are also extralinguistic, like social relations between the speaker or writer and the addressee, but also formalised topics like textual cohesion which conclude "the identities of participants, the temporal and spatial parameters of the speech event, beliefs, knowledge and intentions of the participants in that speech event" (Levinson, 1985:5).

The cited authors express similar statements and define the pragmatic meaning as an extralinguistic category. The consequence is that language lessons should also content some information on pragmatic meaning which comprehension is necessary to be trained especially when English serves as a language for professional purposes.

COOPERATIVE PRINCIPLE

When people communicate they logically rely on their co-communicators that their common intention is to understand each other, to comprehend in the same way what has been said or written. Paul Grice has defined this endeavour as a cooperative principle when producers and receivers of texts and utterances have to meet certain rules to enable meaningful communication happen. He has defined four maxims of cooperative principle: Quantity, Quality, Relation and Manner. The maxims set rules of conversation but partly can be imposed on written language as well. Speakers and writers following them respect the proper range of information given, its truthfulness, its relevance and its clarity, briefness and order. Generally people subconsciously respect cooperative principle and listeners and readers can feel when it is disrupted. The principle counts with implying extra meaning which is not embedded in words. Such an implicature as a kind of inference functions even in professional English when producers rely on professional schemata within their professional knowledge.

COHERENCE

Only a text that is coherent makes sense. Coherence of texts and utterances is narrowly connected with cooperative principle and pragmatic meaning. Alongside pragmatics and its analysis of invisible meaning, the study of discourse elucidates "the effort to interpret (and to be interpreted)", (Yule, 2002:140). When interpreting, language users do not rely only on their knowledge of linguistic structures and forms, but also on the experience they have in comprehension, on the pragmatic meaning of an interpreted piece of utterance. They tend to find sense even in disconnected, jumbled and incomplete utterances. They try to find coherence, a quality of which makes the text "connected", not due to linguistic qualities, but due to the human ability to make sense of what we perceive. Nevertheless the principle of logical succession of technical description is the most significant; and if omitted, the receiver is confused and demotivated. A rag-bag of specific electrotechnical expressions which are not explained in advance, and consequently used for explanation of other phenomena, are indeed discouraging for the recipient and the process of perception. The producer when writing should always bear in mind his receiver with his presupposed knowledge of the subject discussed and his schemata, and should not rely on anything that could be present by default. This should especially not happen in journal articles, when the producer cannot predict thoroughly and accurately the recepient´s schemata. The chronological order of facts and explanation is another crucial must in text on science and technology.

Apart from their coherence, utterances must provide formal signs that connect each other and refer to each other in order to enable recipients to follow the gist of the message. Such formal signs that override the sentence, and in written discourse also the paragraph borders, are called *cohesion.*

COHESION

Haliday and Hasan´s cohesion concept (1976) defines cohesion as a semantic phenomenon which "refers to relations of meaning that exist within the text, and that define it as a text. Cohesion occurs where the interpretation of some element in the discourse is dependent on that of another. The one presupposes the other, in the sense that it cannot be effectively decoded except by recourse to it. When this happens, a relation of cohesion is set up, and the two elements, the presupposing and the presupposed, are thereby at least potentially integrated into a text." (1976:4). Cohesion is reflected in the grammatical and lexical systems. Contrary to pragmatic meaning, cohesion is a linguistic category rooted in the system of language itself.

Lexical cohesion, which is my major concern, refers to the use of the same, similar or related words within the text. Such recurrence of these classes of words has been defined by Halliday and Hasan as reiteration which is "a form of lexical cohesion which involves the repetition of a lexical item, at one end of the scale; the use of a general word to refer back to a lexical item, at the other end of the scale; and a number of things in between – the use of a synonym, near-synonym, or superordinate" (1976:278). A part of the following text will illustrate these types of lexical cohesion:

(1)You can go out right now and buy a machine translation system for anything between £100 and £100,000.(2) But how do you know if it´s going to be any good ? (3)The big problem with MT systems is that they don´t actually translate: they merely help translators to translate.(4) Yes, if you get something like Metal (very expensive) or GTS (quite cheap) to work on your latest brochure, they will churn out something in French or whatever, but it will be pretty laughable stuff.

The underlined words have the same reference or as Halliday and Hasan´s have formulated it: "All these instances have in common the fact that one lexical item refers back to another, to which it is related by having a common referent. (1976:278).

The cohesion concept is partly exposed to criticism by Brown and Yule (1983) who use examples of discourse to prove that formal cohesion is not sufficient to guarantee identification as a text, nor will it guarantee textual coherence (1983:197). They come to the conclusion that: "Texts are what hearers and readers treat as texts" (1983:199) since the recepient´s natural tendency to seek a sense in what he hears or reads plays its substantial role in the process of correct perception. The main objection given by Brown and Yule (1983:200-204) is that the reference between presupposing and presupposed elements need not be formally correct, but it must successfully be identical in both the producer´s and receiver´s mental representations (see Widdowson´s schemata above). In other words the formal cohesive links may be misleading if used in a text where individual sentences include formal references but the text is not coherent and has no sense. To illustrate Brown and Yule´s conclusions, it is instructive to present one of their examples (1983:197):

I bought a Ford.. *A car in which President Wilson rode down the Champs Elysées was black. Black English has been widely discussed. The discussions between the presidents ended last week. A week has seven days. Every day I feed my cat. Cats have four legs. The cat is on the mat. Mat has three letters.*

As it is possible to see, no sense can be found in this paragraph in spite of that the cohesion markers are present there. Mona Baker (1992) assumes that cohesive items displayed on the surface of the text make coherence explicit. Nevertheless, she states in harmony with Brown and Yule (1983) that formal cohesive markers do not secure coherence of the text, which is dependent on the recepient´s individual capability of the text´s interpretation. To make the explanation more "human" I can state that good *lexical* cohesion can support comprehension substantially, especially in texts whose contents are very specific and which situational constrain is defined by professional boundaries. To illustrate my statement, here is an example of a text on electrical engineering:

Computers can deal with different kinds of problems if they are given the right instructions for what to do. Instructions are first written in one of the high-level languages, e.g. FORTRAN, COBOL. ALGOL, PL/I, PASCAL, BASIC, or C, depending on the type of problem to be solved. A program cannot be directly processed by the computer until it has been compiled, which means interpreted into machine code. Usually a single instruction written in a high-level language, when transformed into machine code, results in several instructions.

The underlined expressions are items of lexical cohesion as they refer to the same entity. It is a typical example of lexical cohesion which is established through the lexis of the texts. Therefore it is 'phoric' cohesion which corresponds with the transactional function (i.e. informative) of the texts on engineering. Such lexical items and lexical patterns in the investigated texts secure their coherence not on the basis of structural relationships but due to their lexical meaning or their common referents. The qualities represented by the lexical system of language, though they cannot be determined as precisely as grammatical rules, contribute strongly to the coherence of texts.

MODALITY AND FORMALITY

These are further pragmatic categories necessary for a well styled text. Modality serves to various purposes of written texts: a technical report, a conference contribution, an abstract, a scientific book etc., etc. Whenever your write, you have to choose an appropriate pattern, an adequate form for your text. Formality, on the other hand, is a tool that expresses the social occasion, the social level of an utterance or a text. Newmark, for example, suggests a sophisticated scale of formality comprising the following grades: officialese, official, formal, neutral, informal, colloquial, slang and taboo (1988:14). According to this, texts on engineering display various levels of formality. Mainly they are formal, especially when written, but it is common to hear even an informal language of electrical engineering; its domain being a conversational dialogue. In a lively conversation on specific electrotechnical subjects, which are the core of their profession, electrotechnical engineers and technicians can also use a sort of a professional slang. Contrary to this, for example, a warranty certificate of an electrotechnical device displays a highly official language.

RECEIVERS

Receivers, or recepients linguistically said, of texts should influence substantially the content and also the format of a text or an utterance. The producer has to keep in his mind the receivers´ schemata of world, what is the degree of their specific knowledge in the topic described. The better instructed group the receivers are, the more specific professional language and knowledge can be used in the text. As the formality scale is concerned, the more formal the occasion or printing means are, the more formal language will be appropriate.

FINALLY

As has been demonstrated, there are several important categories which are extralinguistic and they constitute a meaningful text or utterance. I consider them to be of great importance and they have to be included in courses of English for undergraduate and postgraduate students of engineering. The language system itself cannot fully and thoroughly cover all the varieties and nuances of meaning involved in their professional language – in English.

REFERENCES

[1] Baker, M., "*In Other Words*", 1992,
[2] Brown, G., &Yule, G., "*Discourse Analysis*", 1999
[3] Crystal, D., "*Language and the Internet*", 2001
[4] Halliday, M.A.K. & Hasan, R. "*Cohesion in English* ", 1976
[5] Krhutova, M. "*The Language of Electrical Engineering as a Special Province*", 2003
[6] Newmark, P. "*A Textbook of Translation*", 1987
[7] Potts, Ch. "*The Logic of Conventional Implicature*", 2004
[8] Trask, R.L. "*Key Concepts in Language and Linguistics*", 2004
[9] Yule, G. "*The Study of Language*", 2002
[10] Widdowson, H.G,."*Linguistics*", 2000