Krhutová, M. (2008) *The Language of Electrical Engineering as a Special Province*. Brno: Akademické nakladatelství CERM, 148 pp.

Teaching foreign languages, in particular English, to engineers has become crucial with the ever-increasing integration of the European Union and the process of overall globalization. Milena Krhutová's monograph – *The Language of Electrical Engineering as a Special Province* – investigates the language of texts on electrical engineering with the aim of facilitating students' comprehension of scientific literature and enhancing their skills in using academic English, since a good knowledge of English is an important part of engineering education now that English has become the 'lingua franca' of the modern world. Without appropriate skills in English, today's young experts can face serious problems, for example, when making contacts with the rest of the world or when trying to get better professional positions both in this country and abroad.

The language of electrical engineering reflects the latest achievements in this field of science, with the result that many neologisms are being coined all the time. These often do not have Czech equivalents and thus new lexical items are sometimes formed ad hoc by technical experts and students, or English loanwords are used, mostly with Czech pronunciation. Since this specific language variety has still not been given much attention by linguists, it remains the case that relatively little is known about the structure and regularities of texts on electrical engineering. By contrast, expressions from electrical engineering are nowadays becoming a part of the general understanding of English. Krhutová assumes that in this situation students' linguistic sense and education should be cultivated so that they can speak fluently, write with ease and understand scientific technical texts written in English. With this aim in mind, she analyses texts on electrical engineering which her students read and learn for their English classes. Two sets of these texts have been used for teaching English in courses of the Department of Foreign Languages at the Faculty of Electrical Engineering and Communication, Technical University, Brno, while the texts in the third set have been excerpted from original English scientific books, technical reports and scientific project submissions. By way of comparison, Krhutová has analysed these sets of texts in order to arrive at classification criteria that seem important for her objectives.

The whole study consists of five chapters, followed by a *Glossary of Terms*, *Bibliography*, and, as an appendix, a *Corpus of Investigated Texts*. All chapters are further subdivided into sections and written in a reader-friendly way. In the first chapter, *State of the Art*, Krhutová explains why she, following Mathesius and Vachek in particular, applies a functional approach in her study and, furthermore, discusses important notions from the areas of pragmatics, stylistics

and discourse analysis considered relevant for her investigation into texts on electrical engineering. Drawing above all on Vachek (1948, 1962), Halliday (1987) and Crystal (2001), she explores the most important characteristics of written discourse, in particular when it is compared to the spoken variety of the language. Her main objective is to find out whether certain language phenomena appear relevant and whether they are represented sufficiently in her data to be defined as regularities; in addition, she intends to classify these phenomena into categories.

A substantial part of the first chapter is devoted to cohesion. Based on Halliday and Hasan's seminal work *Cohesion in English* (1976), Krhutová explores lexical cohesion, which is the major concern of her analysis. While exemplifying her arguments by authentic examples of texts on electrical engineering**,** she also takes into account other ways of conceptualising cohesion, as presented in, for example, Parson (1990), Brown and Yule (1983). She assumes that the texts under her investigation demonstrate exclusive cohesive force, which is caused on the one hand by the high frequency of occurrence of technical terms which have specific content and which are used for specific purposes and on the other by the low frequency of occurrence of such terms in general language.

Chapter 2, titled *Material under Investigation*, provides a detailed description of the three above-mentioned sets of texts on electrical engineering. Although all of them can be categorized as English for specific purposes, their characteristic features differ, since each set is intended for a different group of recipients: the texts in the first set are taken from the technical journal *New Scientist*, which is intended for experts as well as laymen; the texts in the second set are drawn from two technical textbooks, *Oxford English for Computing* and *General Engineering*, which are intended as resource books for students; and the third set, which is the only one comprising texts not used in classes, consists of texts excerpted from authentic books on electrical engineering, technical reports, project applications, articles in scientific journals, and conference proceedings. Krhutová classifies her texts in the following way: the texts in Set I demonstrate popular scientific style, whereas those in Sets II and III represent the style of science and technology. She also specifies her research objectives – to trace the chains of lexical items in all the three sets and to classify the individual lexical items according to Halliday and Hasan's (1976) taxonomy of lexical cohesion.

The third chapter, called *Classification of Investigated Texts*, starts with classification criteria which Krhutová considers relevant for her analysis: 1. visual components (format), 2. density of technical vocabulary, 3. stylistic variety, 4. lexical cohesion, and 5. target groups of recipients. After the application of these criteria, the author expects the texts under investigation to manifest

differences in the following aspects: 1. formality of style, 2. structure of terms, and 3. occurrence of individual lexical cohesive items.

All the relevant results in Chapter 3 are presented with clarity, each time one of the three sets is compared to the other two. The occurrence of synonyms is more common and collocations are less frequent in Set I than in the others. By contrast, general words show similar frequency of occurrence in all the three sets. Branch-specific terms as well as general scientific expressions are represented only exceptionally in Set I. These popular scientific texts are mostly monologic with some inserted dialogic parts, which make them sound less impersonal. As Krhutová concludes, the texts in Set I display a lower level of formality and impersonality than the other two sets. The style of the texts in Set II can be characterized as the formal, impersonal style of science and technology. Owing to the explanatory character of the texts, they comprise a higher number of general words than texts in Set III. The number of collocations is the same as in Set III, but twice as high as in Set I. Both branch-specific terms and general scientific expressions are frequently used. The style of texts in Set III is impersonal, formal and objective, its purpose being above all explanation and description of specific phenomena. The composition of lexical cohesive items is similar to that of Set II, the only difference being the higher number of general terms. Concerning lexical cohesive items, all the texts under scrutiny display almost the same number of superordinate items represented by general English expressions, general scientific expressions, and general expressions and branch-specific expressions from the field of electrical engineering.

In Chapter 4 titled *Conclusions* Krhutová formulates her conclusions concerning the individual classification criteria stated in Chapter 3, notably with regard to her main research objective – the characterization of the language of electrical engineering as a specific kind of language constrained situationally with occupational orientation. Concerning the first criterion – the format of the texts explored – this emphasizes the formal contents and formal language of the texts under scrutiny by using traditional and rather plain shapes and fonts. In general, the format correlates with the degree of formality of the message conveyed. As regards the second criterion – the density of technical vocabulary – the investigation shows that each set contains more than 25 per cent of technical terms. Of particular interest is the relatively high frequency of occurrence of both general and branch-specific terms, above all from the areas of radio-electronics, telecommunication, microelectronics, automation and computer science.

With regard to the third criterion – stylistic variety – the texts are written in the style of science and technology. This is especially typical of the texts in Set III and Set II; in the latter set one text can be said to be written in popular scientific

style, which is also the style of all the texts in Set I. On the whole, as Krhutová maintains, the variety of the language of electrical engineering is primarily marked by specific lexical features, whose occurrence in other stylistic varieties is unlikely. As for the forth criterion – lexical cohesion – the investigation proves that specific lexical cohesive items are very frequent in the texts analysed, thus representing strong cohesive force. In addition, certain lexical cohesive chains create an intelligible net of mostly province-specific terms, which serve as orientation points for recipients in their gradual processing of the information delivered.

The last – fifth criterion – concerns target groups of recipients: the texts in Set I are aimed at laymen who are interested in electrical engineering or have had some instruction in this field of science, and, of course, students of electrical engineering, both at secondary and tertiary levels of education; the texts in Set II are published in textbooks of English for electrical engineering, and thus it follows that they address informed readers who have already learnt some basic theories of electrotechnics and who have sufficient competence in English; finally, the texts in Set III are designed for a rather compact group of recipients, i.e. experienced experts and scientists, who are well informed and competent recipients with a profound knowledge of electrical engineering as a whole and of certain specific disciplines such as those mentioned above. On the basis of Krhutová's research a course of English for specific purposes will be designed to teach and train the language of electrical engineering. Resulting from the research findings a new approach to teaching will be used to improve students' learning, providing them with an awareness of individual aspects of the style of English that is used in the field of electrical engineering.

Chapter 5 – the last chapter of the study titled *Discourse Analysis of Investigated Texts* – provides numerous exemplifications and detailed tables with results drawn from all the individual texts analysed with special regard to lexical items occurring in the cohesive chains. This chapter gives a lot of evidence for the conclusions drawn in the preceding chapter and, at the same time, the examples can be used for learning and teaching purposes.

Milena Krhutová's study is certainly a welcome contribution to the study of scientific English, in particular the language of electrical engineering, a variety whose analysis has become very important in the world of today. As a well-constructed and well-documented monograph it will be of interest not only to specialists involved in electrical engineering but also to linguists doing research into different areas of English for specific purposes.

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