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## Introduction

It is not easy to define precisely the essence of the relationship between psycholinguistics and other disciplines, or even to give an exhaustive definition of the scope of psycholinguists' interests. This is primarily because of the intrinsically interdisciplinary nature of the field, and its direct connection with people as the object of research. The diversity of the types and dimensions of human behaviour, as well as the almost unmanageably large number of factors that can initiate and modify it, mean that any attempts even partially to describe and explain these scientifically can and must be made from different perspectives and at different levels of generality.

The focusing of research and descriptions on linguistic behaviour does not significantly reduce this diversity. Analysis of language production covers objects ranging from the features of the smallest elements, realisations of phonemes, up to sets or sequences of larger units (phrases, sentences, utterances, dialogue sequences and others), which constitute a defined whole in a communicative situation, and investigations are made of their links with a whole range of processes and factors: biological, chemical, physical, psychological, sociological and cultural. Psycholinguistics thus includes within its scope both external and internal factors and behaviours, both automatic and controlled, the features and actions of systems that make up part of the human body, the physical features of sounds and sound systems, cognitive functions and emotional and personality factors (permanent and temporary), specifics of the social situation and cultural influences, and all of this in relation both to adults and to children at all stages of their development.

This multifacetedness and breadth of scope of research done in this field also creates wide-ranging opportunities for its practical application, most of which can be categorised under two general headings. The first is clinical applications, relating to the diagnosis and treatment of linguistic and communicative disorders. The second is applications relating to the technology of language and speech, supporting the development of systems of communication between people and machines, which are becoming increasingly important and widespread in human life.

It is not therefore surprising that people come to psycholinguistics by various routes, and that researchers who can be called psycholinguists have a variety of academic backgrounds. However, in work on linguistic behaviour, there is unquestionably a need to combine knowledge and skills in sometimes very different areas, often including both the humanities and the pure sciences. Also valuable is a desire and ability to plan and carry out research which is complicated by the "human factor", and which may thus produce numerous variables which blur the picture of those aspects of behaviour being analysed.

Professor Piotra Łobacz's academic path led her from Polish studies to psycholinguistics, and is a prime example of the combined use of abilities in both the humanities and the pure sciences. The beginning of that path was marked by her choice of pure linguistic subjects during her philological studies, and more precisely the topic of the sound material from which natural language is built. She devoted the early years of her work to research in Polish phonetics and phonology, including analysis of the acoustic features of Polish vowels and the development of criteria for the interpretation of phonological controversies concerning Polish sounds, as well as phonotactic analysis of Polish texts and studies of phoneme frequencies in different varieties of Polish.

Apart from her continuing academic development, the effects of her Polish studies and of her pure linguistic research were reflected for many years in Professor Łobacz's teaching activities, including her lectures and seminars in linguistics and phonetics and in the fundamentals of Polish grammar, as well as her supervision of master's dissertations in the field of comparative phonetics, covering both European and non-European languages (for example, Arabic, Japanese, Chinese, Spanish and Catalanian).

Even in her preparations for her doctoral thesis, Piotra Łobacz began to deal with problems of psycholinguistics, relating to the field of speech technology: she investigated the influence of speech rate on the spectral parameters of vowels and on continuous speech perception. Her work on the statistical description of phonetic parameters, for the purposes of both speech synthesis and automated speech recognition, was continued in subsequent years. At the same time she studied human speech processing in greater and greater breadth, carrying out work on speech perception, initially with regard to phonetic aspects (psychophonetics), and working on a synthesis of the then existing models and theories of the mechanisms of speech signal processing and decoding. This work served as a starting point for her habilitation thesis, whose objectives were defined to include both the improvement of automatic speech recognition and the verification of existing models of speech perception. The considerations and original research presented in the thesis led to a proposal for a new model of linguistic data processing, covering not only the phonetic level, but also the level of the word, and the way in which those levels are linked in the speech perception process. In addition to the role of the co-occurrence of articulatory and acoustic features in the process of perception and comparison of sounds, one of the most significant results of the research described in the thesis is the identification of certain discrepancies between criteria for the perceptive differentiation of speech sounds and their division based on articulatory features. Other conclusions contained in the work relate to, among other things, criteria for lexical access (including its dependence on the grammatical form of the stimulus word) and the role of down-top analysis in the perceptive process.

Further research on mechanisms of processing of phonological aspects of speech, with the use of modern psychometric methods, led to the formulation of criteria for the perceptive classification of the Polish consonantal speech sounds. Her publications on this subject, and their role in uncovering the mechanisms of speech sound perception, cemented Professor Łobacz's standing in the field of psycholinguistics, both in Poland and internationally.

Another of her fields of interest is developmental psycholinguistics. Her first series of investigations in this area, which lasted for several years, aimed among other things to reconstruct the stages in which children master the elements of the phonological system, and to identify the articulatory differences between child and adult pronunciations. The research,

which concerned both children's articulatory norms and the phonetic and acoustic features of children's speech (presented in, among other works, the monograph titled *Polska fonologia dziecięca* [Polish child phonology], 1996), are not only of significant theoretical value, but also have uses in both of the above-mentioned primary areas of practical application: in the diagnosis and treatment of linguistic disorders, and in the development of systems of human-machine communication (as they can serve as a basis for the construction of algorithms for recognising children's speech). Her continued pursuit of this line of research, extended to include issues relating to children's phonological awareness, was crowned in later years by the formulation of a phonological profile of a children's norm and the publication of extensive synthetic work relating to the acquisition of a phonological system in ontogenetic development. A link to earlier areas of interest and research is provided here by her work on problems of language development relating to not only articulatory, but also perceptive aspects.

It should be noted that Professor Piotra Łobacz's academic interests have also included issues relating to second-language acquisition. This is reflected in the large number of master's dissertations, as well as several doctoral theses, prepared under her supervision and concerning issues in L2 phonetics and phonology, including for example the perception and realisation of tonality by native Polish speakers, and the phonotactical problems experienced by native Korean speakers learning Polish. To assist the further development of research into normative production, Professor Łobacz also prepared synthetic works relating to fundamental issues in Polish phonetics, covering acoustic and perceptive as well as articulatory aspects.

A very characteristic and important indication of the multifaceted interests and activity of Professor Łobacz in the field of psycholinguistics is provided by her research work and publications, produced over many decades, concerning psychophonetic phenomena of a pathological nature, and relating to both aspects of speech processing, namely production and recognition. She investigated on the one hand communicative disorders resulting from anatomical damage to speech organs, and on the other the speech of people with seriously damaged hearing, including analysis of the segmental and suprasegmental features of the speech of deaf people.

The multifaceted nature of her interests, penetrating the fields of both general linguistics and psycholinguistics, and relating to both norms and pathologies, is also reflected in her works and publications with direct practical application, produced in cooperation with various scientific and medical institutions. These have related to such diverse fields and problems as the features of speech sound transmission in different conditions (such as in cinemas or in an aquatic environment), the adaptation of automatic transcription rules for Polish to a template used for Western European languages (this research led, among other things, to a published recording containing pronunciations of Polish surnames and proper names), and above all the various aspects of diagnosis and therapy of speech recognition and production: diagnosis and rehabilitation of the speech of laryngectomy patients (including the use of a prototype artificial larynx), diagnosis of defects in children's pronunciation, early detection and rehabilitation of hearing disorders in children, and the use of speech visualisation as a tool for the revalidation of deaf people.

A confirmation and supplementation of the diversity of the scientific and research interests of most university academics is the form and scope of their teaching activity. Apart from

the aforementioned classes in various aspects of linguistics, Professor Łobacz has also for many years given lecture courses in psycholinguistics and fundamentals of speech therapy, as well as various lecture series covering particular subfields of psycholinguistics, including first language acquisition and the psycholinguistic basis for the processing of writing. Topics of master's dissertations which she has supervised include, apart from problems in phonetics, also developmental phonology, the structure of the mental lexicon, the speech of deaf people, and speech perception.

Professor Piotra Łobacz has so far supervised nine successful doctoral students. The varied subject matter of their theses reflects the breadth of her scientific interests. The spectrum of topics covered includes psychosemantics, articulatory and acoustic phonetics, speech therapy, communication by people with language dysfunctions, and human-machine communication. Professor Łobacz has willingly provided support to many academics in Poland and abroad in their work at various stages of their careers.

All of her colleagues are aware of her lively involvement in the organisation of academic life and work. As head of the Department of Psycholinguistics since its formation, she created an atmosphere which helped younger colleagues to develop, inspiring them to undertake ambitious topics, while at the same time not placing restrictions on their scientific interests. Her modern approach to the organisation of research has borne fruit in the form of numerous research projects conducted by her colleagues. In the period from 1993 to 1999 she represented the Faculty of Modern Languages on the University Senate. In the periods from 1988 to 1990 and from 2000 to 2008 she served as vice-director for academic matters of the Institute of Linguistics, and during the following term of office (2008–2012) as its director. It was at the initiative of Professor Łobacz that the Institute of Linguistics introduced a two-year Post-graduate Non-Degree Studies in Rehabilitation of Disorders of Linguistic Communication, which offered a unique and innovative study programme.

It is not easy to estimate the strength and significance of the influences and mutual interactions that occur between people who come into contact during their scientific careers. This results from the specific nature of intellectual processes, whose essence cannot be directly observed. All that is observable is certain external activities, which serve as a source of inspiration, such as discussions, listening to lectures, and reading each other's publications, including directly reviewing them or commenting on them.

The papers contained in this volume are written by authors who have met Professor Piotra Łobacz at some point on their scientific journey, and who have formed with her such relations of mutual inspiration and interaction. The subject matter of the papers, which indicates the diversity of the research interests of their authors, also reflects the scope and directions of that inspiration, and alludes to Professor Łobacz's path of academic achievements in linguistics and psycholinguistics which have been described above.

The article by Jerzy Bańcerowski deals with the isophonic aspect of phonotactics and follows his earlier works in this area. He stresses that the isophonic and diaphonic aspects are indivisibly related, as they complement each other, and this complementarity originates from a principle which makes possible the effective handling of a great number of lingual signs. This principle also necessitates a certain kind of equilibrium between isophony and diaphony in the coding of those signs.

In her contribution, Dorota Brzozowska presents a study of media discourse concerning the end of the world. She focuses her attention on humorous visual contributions ("memes") prepared and published by active users of the Web.

The paper by Joan Castellví and Dorota T. Szmidt is an acoustic phonetic study of Polish fricative + nasal clusters. The authors use the CSL system for the extraction and observation of waveforms, spectrograms, glottal waveforms and glottal pulses. They reveal differences in glottal activity depending on the place of articulation of a fricative, as well as in its duration. In the fricative-nasal limit, the authors find voiceless intervals, voiced intervals, or absence of any transition element. They show that the occurrence and the characteristics of the transition interval are influenced by the place of articulation of the fricative.

Dafydd Gibbon, Katarzyna Klessa and Jolanta Bachan offer a critical overview of selected methods and approaches to the measurement and modelling of speech segment durations and speaking tempo. They include both traditional “rhythm metrics” and more recent approaches, including CART-based methods.

In her text, Ewa Jarmołowicz-Nowikow presents two experiments and a survey conducted in order to explore the pointing gestures produced by Poles. She attempts to identify the factors that may influence or determine their form and usage. She places her study in the wider context of intercultural research on gesture and politeness.

The text by Maciej Karpiński is an attempt to diagnose a direction of change in contemporary psycholinguistics and its perspectives. Communicative alignment has recently become an extensively explored phenomenon. The author stresses its complexity and argues for its serious treatment based on a multidisciplinary approach and modern research methods and techniques.

The contribution by Anita Lorenc is a study in articulatory phonetics based on data from modern electromagnetic articulography. These data were used for the preparation of pronunciation animations of 45 words that demonstrate normative realisations of all of the vowels and consonants of Polish, as well as eight animations of defective articulation.

Nicole Nau proposes a new viewpoint on the traditional understanding of differences between first and second language acquisition. She stresses that the opposition of first vs. second language should not be identified with that of child vs. adult. She also points to many age-related, dynamically changing factors that influence and determine language acquisition in children, as well as to the fact that second language acquisition is different mostly due to the fact that “it is second.”

Emilia Szalkowska-Kim explores the factors that influence L2 pronunciation in adult speakers. She points to the limited number of comparative studies not involving English, and the limited number of speech corpora and databases enabling data-driven studies of phonetic and phonological issues in L2 acquisition.

The contributions to this volume represent a wide spectrum of research fields, from language structure to the structure of communication, from mental processing to actual utterances, from the psychological to the technological perspective. We hope that they reflect, at least to a certain extent, the range of Professor Piotra Łobacz’s interests and at least some aspects of her approach to language study.

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