APPENDIX no. 2a

SUMMARY OF ACADEMIC ACCOMPLISHMENTS

1. First name and surname

Sylwester Paweł Jaworski

2. Academic degrees, titles

1992 Master of Arts (Physical Education)
Szczecin University – Institute of Physical Culture
Title of M.A. thesis: *Estimation of physical efficiency of students doing and not doing sports*
Thesis supervisor: prof. dr hab. Marian Pytasz

2002 Master of Arts (English Philology)
Adam Mickiewicz University in Poznań – Institute of English
Title of M.A. thesis: *Self-presentation in the inaugural speeches of Bill Clinton*
Thesis supervisor: prof. dr hab. Anatolij Dorodnych

2006 Doctor of Philosophy in linguistics
Adam Mickiewicz University in Poznań
Title of Ph.D. dissertation: *Lenition processes in English and other languages: A hierarchy of susceptibility to inertia*
Thesis supervisor: prof. dr hab. Katarzyna Dziubalska-Kołaczyk
Reviewer 1: prof. dr hab. Piotr Gąsiorowski
Reviewer 2. dr hab. Ewa Waniek-Klimczak

3. Employment in academic institutions

2016 - to date
Assistant professor, Department of Celtic Languages, Institute of English, Szczecin University

2008 - 2016
Assistant professor, Department of English, Szczecin University

2009-2015
Assistant professor, Institute of Humanities, Department of English, State Vocational College in Gorzów Wielkopolski

2002-2016
Lecturer, Department of Foreign Languages, Collegium Balticum in Szczecin

2002-2015
Teacher Training College in Szczecin

4. Academic achievement within the meaning of art. 16 paragraph 2 of the Act of 14 March 2003 about academic degrees and academic title as well as the degrees and title in art (Official Journal of Laws no. 65, item 595, as amended)

a) title of academic achievement

Rhotic Sounds in the Slavic Languages: An Acoustic Study

b) author, title, year of publication, place of publication, publisher

Sylwester Jaworski. *Rhotic Sounds in the Slavic Languages: An Acoustic Study*. 2018. Hamburg: Verlag Dr. Kovač. pp.341.

c) summary of objectives, results and potential use / implications of the academic achievement (monograph)

4.1 Objectives of the academic achievement

The monograph titled *Rhotic Sounds in the Slavic Languages: An Acoustic Study* is concerned with the acoustic features of the many allophones of the trills /r/, /rʲ/, /r̝/ and /ʀ/, which constitute phonemes of the currently spoken Slavic languages. Slavic rhotics constitute an intriguing area of study for the following reasons: (i) they include cross-linguistically rare sounds, i.e. /rʲ/ and /r̝/, (ii) in several languages, e.g. Croatian, Czech, Slovak, the apical /r/ has a syllabic variant that functions phonologically as a vowel, (iii) the complex phonotactics of West Slavic languages allows for sound sequences containing obstruentised rhotics, i.e. not adjacent to a vowel and non-syllabic and (iv) rhotics have been shown to be phonetically unstable both diachronically and synchronically.

The label *trill* used in the phonetic literature to refer to the above-mentioned rhotic sounds seems to be inadequate as trilled realisations of /r/ and /ʀ/ tend to be rather infrequent, while trilled allophones of /r̝/ and /rʲ/ constitute a marginal minority. The primary objective of this work is to provide acoustic evidence showing the amount of articulatory variation exhibited by the rhotic phonemes of the Slavic languages. However, it must be stressed that this book is not a sociolinguistic study. Rather, the data presented in this work are meant to shed light on several crucial questions relating to rhotics, namely, (i) How many articulatory variants do the rhotic phonemes of the Slavic languages have?, (ii) Which articulatory variants predominate numerically in each language? (iii) How are the articulatory variants distributed? (iv) Do adjacent consonants affect the phonetic realisation of the rhotics? (v) Are there any acoustic and articulatory differences between syllabic and non-syllabic rhotics in the languages that have both variants in their sound system?, (vi) Do syllabic rhotics have similar properties in all the languages in which they occur?, (vii) How do obstruentised rhotics relate to syllabic r-sounds in terms of their articulatory and acoustic features?

Question (ii) relates to Maddieson's (1984: 79) doubts regarding the unexpectedly high incidence of articulatorily difficult trills in the sound inventories of the world's languages. It is worth emphasising that the articulation of any trill is not controlled by muscular action. Rather, trilling occurs as a consequence of creating specific aerodynamic conditions within the oral cavity, which requires a great deal of articulatory precision. Therefore, in connected speech, trills are frequently replaced with sounds that are easier in terms of articulation, e.g. taps or fricatives. The likelihood of phonetic reduction seems to be even greater in the case of /rʲ/ and /r̝/ due to their having secondary articulatory features. An analysis of the frequency with which the allophones of the examined rhotics occur in speech might suggest that the phonemes should not be termed trills.

In order to achieve the objectives, numerous phonetic realisations of the four phonemes in the thirteen currently spoken Slavic languages were analysed. For methodological reasons, available recordings of the Bible were used as the primary source of data. Unfortunately, Kashubian and Sorbian recordings of the Bible have not been made to date. Therefore, the author of the book organised recording sessions in Germany and Poland during which native speakers of Kashubian and both Sorbian languages read long fragments of the New

Testament.[1] Analysing recording of the same text is a methodologically sound procedure as many target words occur in very similar, if not identical, syntactic position. However, the pronunciation of any speech sound depends on other factors, e.g. the phonetic environment, the position within the syllable or the register adopted by the speaker (Bybee 2001; Shockey 2003). Given the complexity of the research problem, a decision was made to restrict the scope of the study to the domain of the word. Thus, the independent variables taken into consideration included: (i) the position of an r-sound within the syllable, (ii) adjacent sounds and (iii) stress placement.

The acoustic analysis performed for the purposes of this work examines tokens of r-sounds in all the phonological environments, listed in (1). The rhotics /r/, /ɾ/ and /ʀ/ can be found in all five environments. The palatalised rhotic /rʲ/ follows a different pattern in that its distribution is restricted to prosodically strong onset positions in which it is used contrastively. Russian and Lower Sorbian are the only languages whose phonotactics allows for /rʲ/ in all five environments.

(1)	#_V	word-initial prevocalic
	C_V	consonant-rhotic onset clusters
	V_V	intervocalic
	V_C	postvocalic rhotic-consonant coda clusters
	V_#	postvocalic word-final

The analysis of the acoustic properties of rhotics in clusters involves onset and coda sound combinations. The articulation of a rhotic sound depends primarily on the amount of muscular effort made by the speaker, yet the adjacent consonant may also exert a certain influence. Given the phonotactic complexity of the Slavic languages, only the most common Cr- and –rC clusters involving stops and fricatives were taken into consideration in this study. The former clusters were further divided into three groups including bilabial, dental and velar plosives, while in the latter sound combinations, sibilant – rhotic and non-sibilant – rhotic sequences were distinguished.

In word-initial and intervocalic position, it was possible to determine whether word stress has a significant impact on the physical realisation of rhotics. It is usually assumed that stressed syllables are pronounced with a greater amount of precision than unstressed ones. Consequently, rhotics in the latter environments are expected to undergo more radical reduction than in the former. In this study, word stress was said to have a significant influence on the pronunciation of an r-sound if the distribution patterns formed by its allophones in the stressed and unstressed conditions were found to be statistically different. Contingency tables were used to determine whether differences between distribution patterns reached the level of statistical significance.

With respect to non-vowel-adjacent rhotics, they occur in the contexts presented in (2). In most South Slavic languages, Czech and Slovak, r-sounds occurring in such environments are said to be syllabic, e.g. in the cognate *krv* 'blood'. On the other hand, in East and West Slavic, they are referred to as obstruentised rhotics. Such sound combinations are relatively frequent in Polish where all three types are permissible, as in *rdza* [rd͡za] 'rust', *trwać* [trfat͡ɕ] 'to last' or *wiatr* [vjatr] 'wind'.

(2)	#_C	word-initial pre-consonantal
	C_C	inter-consonantal
	C_#	word-final post-consonantal

[1] To finance the project, the author submitted an application for a research grant to the Sorbian Institute in Bautzen, Germany (registration number 39/17). Despite being positively reviewed, the grant did not receive funding.

4.2. The structure of the book

Rhotic Sounds of the Slavonic Languages comprises an introduction, eleven chapters, discussion and a list of references. Since the monograph is primarily concerned with the acoustic features of rhotic sounds, it contains numerous spectrograms, graphs and tables. The first three chapters are of a theoretical nature, Chapter 4 describes the design of the research, while Chapters 5-10 describe in detail the acoustic properties of /r/, /rʲ/, /r̩/, obstruentised /r/, syllabic /r/ and /ʀ/, respectively. Chapter 11 summarises the findings regarding each rhotic phoneme.

The opening chapter familiarises the reader with the heterogeneous class of rhotics and provides an outline of the articulatory and acoustic characteristics of the major representatives of the group, i.e. trills [r], [ʀ], taps [ɾ], [ɽ], fricatives [ʁ], [χ] and approximants [ɹ], [ɰ]. As part of the discussion, various rhotics are related to one another in terms of articulation, which is helpful in explaining some of the diachronic changes that were attested in numerous languages and accounting for the considerable amount of synchronic variation observed in the analysed recordings.

Chapter 2 is entirely devoted to the phonology of rhotics. It examines the distributional properties of r-sounds from a cross-linguistic perspective and presents the phonological processes that rhotics are frequently involved in, e.g. lateralisation, metathesis, affrication. Particular attention is paid to those changes that have resulted or are likely to result in modifications of the phonemic system of a language. The phonology of rhotics is also the main theme of Chapter 3, yet the discussion is confined to the diachronic changes that affected Slavic rhotics over a period of several millennia extending from Proto-Indo-European to the end of the Old Church Slavonic era. The changes affecting the */tъrt/ and */trъt/ sound sequences receive special attention as they played a significant role in the process of disintegration of Common Slavic and ultimately gave rise to nearly twenty distinct languages.

In Chapter 4, the objectives of the investigation are specified and a comprehensive description of the research methodology is provided. This section enumerates the selected phonological environments in which the target sounds are placed and it lists the temporal and acoustic properties that need to be measured for each allophone of the rhotic phonemes. The collected data were used to make comparisons between allophones of rhotics occurring in different contexts as well as between allophones of the same type attested in the investigated languages. Finally, Chapter 4 also contains a short description of several statistical tests applied in the empirical part of the book.

Chapters 5-10 present the results of acoustic analyses of the Slavic rhotic phonemes performed with a view to distinguishing their allophones and showing the range of synchronic variation in read formal speech. It is worth emphasising that, in most books on phonology, /r/ is described as though it had only trilled and tapped allophones, while the real number is much higher (for Polish /r/ see Wierzchowska 1980, Sawicka 1995, Gussmann 2007). Each chapter is devoted to a different phoneme. At the outset, the allophone types encountered in the examined recordings are presented and their distribution in the five contexts specified in (1) or (2) is described. The generalisations presented in the chapters are based on 50 tokens of the phonemes, pronounced by two native speakers of all Slavic languages. The following sections are concerned with the acoustic features of the distinct variants.

4.3. Main findings

The ample evidence presented in the monograph clearly demonstrated that the range of variation of the rhotic phonemes, except for the fricated trill of Czech, is greater than suggested by other authors. The major merit of this work seems to lie in distinguishing several

allophones of /r/, e.g. fricativised and approximantised trills or affricated rhotics, which, to the best of my knowledge, have never been mentioned in the phonetic literature on Slavic rhotics. Fricativised trills consist of a series of complete or incomplete closure phases (usually two) separated by vocalic elements containing a strong friction component which makes it impossible to determine the quality of the vocalic elements. The sound may seem similar to the fricated /r̝/ of Czech. The adjective *fricativised* was introduced on purpose to indicate that allophones of that type result from mild phonetic reduction of the phoneme /r/; whereas the term *fricated trill* refers to trilled realisations close to the mental representation of the Czech phoneme /r̝/. The acoustic factors that distinguish fricativised allophones of /r/ from trilled variants of /r̝/ include the duration of the closure phase, approximately twice as long as in the case of the former, and the presence of a weak vocalic element, absent in the spectrum of the Czech trill. By contrast, approximantised trills are made up of an alternating sequence of approximantised constriction phases separated by vocalic intervals. In spite of the constituents of approximantised trills being hardly distinctive in terms of their acoustic features, the minute gestures of the active articulator produce an audible impression of trilling. With regard to affricated rhotics, they involve a tap-like closure followed by a long period of friction. For lack of guidelines in the literature, an arbitrary decision was made to classify a rhotic sound as an affricated one if the friction component was at least twice as long as the closure phase. Allophones of this type are usually found in coda clusters and in word-final position.

Another interesting finding relates the amount of allophonic variation of r-sounds to the sound inventory of a language. In the light of the data, trilled variants of /r/ occur regularly in East Slavic and Czech, while they are non-existent in South Slavic. In West Slavic, the incidence of trills is unexpectedly low in the examined corpus. This finding strongly suggests that trilled variants of /r/ are still produced in those languages that have two distinctive rhotics in their sound system.[2] A significantly higher incidence of trilled realisations can be thought of as an attempt at avoiding homophony. To sum up, the Slavic languages can be divided into trilling and non-trilling ones. In South Slavic, the trill /r/ seems to have been replaced with the tap [ɾ], while in East Slavic and Czech, it continues to be trilled. In most West Slavic languages, trilled variants still occur, but speakers tend to replace them with taps.

The palatal /rʲ/ and the Czech /r̝/ should hardly be referred to as trills. Being articulatorily more complex than /r/ makes them particularly susceptible to phonetic reduction. In fact, trilled variants of /rʲ/ were only produced by the Ukrainian informants in prosodically strong word-initial position. Speakers of the investigated languages also seem to prefer different variants of the palatal rhotic. The Russian informants definitely prefer spirantised and approximantised allophones, to tapped variants, while tapped realisations constitute the norm in Bulgarian. As for the Czech fricated /r̝/, it has only three allophones classified as (i) fully articulated fricated trills [r̝], (ii) one-tap trills [r̝³] and (iii) spirantised variants [ɹ̝]. Fully articulated trilled variants are unexpectedly rare in the speech of the Czech informants who usually pronounce the sound as a fricative. The sound also manifests a very strong tendency towards devoicing, particularly when adjacent to a voiceless obstruent.

Finally, the velar trill /ʀ/, found in the Sorbian languages, is normally realised as a fricative that is either voiced [ʁ] or voiceless [χ]. Importantly, the two variants do not occur in complementary distribution. Other allophones of /ʀ/ include trilled realisations [ʀ] and approximantised ones [ɰ]. Unlike the other rhotics examined in the paper, /ʀ/ tends to be

[22] Speakers of Bulgarian and Belorussian constitute a counterargument. In the former language, the informants did not produce a single trill despite having two rhotic phonemes in their sound inventory, whereas the Belorussian informants, who have only /r/ in their sound system, produced the greatest number of trilled allophones. It is argued that, in Bulgarian, the /rʲ/ sound might be falling out of the system the way it did in the other South Slavic languages. As for Belorussian, its speakers are also bilingual in Russian and they might transfer the habit of rolling their r's into their mother language.

deleted when placed in a coda cluster. This tendency clearly results from transfer from German, which is de facto the Sorbians' mother language.

The allophones listed above differ in manner of articulation; therefore, different measurements need to be made to describe their acoustic properties. As regards all trilled allophones, i.e. [r], [rʲ], [r̝] and [ʀ], the lengths of closure phases and vocalic/fricative constituents were measured. When possible, the F1 and F2 of the vocalic constituents were also determined. The temporal parameters were later used to calculate the vibration rate of each type of trill, while the F1 and F2 data were used to determine whether or not there exists a correlation between the acoustic features of vocalic elements and the quality of the adjacent vowel.

The results of the analysis point to the conclusion that the temporal properties of trilled variants do not appear to be dependent on the context in which they occur. Irrespective of their position within the syllable and regardless of the adjacent sound(s), the mean rate of vibration of /r/ is on the order of 24 Hz, with insignificant inter-speaker differences. This result is convergent with data reported by other researchers, e.g. Lindau 1985, Ladefoged and Maddieson 1996, Solé 2002. The fricated trill of Czech has a considerably higher average vibration rate of 33 Hz, which is due to a shortening of the closure phases. As for the vocalic constituents of trills in onset and coda clusters, they were found to be highly dependent on the quality of the adjacent vowel. The results of Spearman's correlation tests revealed that this relationship is particularly strong with respect to the second formant.

Tapped allophones constitute the most frequent variant of /r/ in most contexts. A tap can be thought of as an intermittent closure occurring between two vocalic elements. It implies that, in onset and coda clusters, the consonant and the preceding/following tap are separated by an intrusive vocalic element. In word-initial, word-final and intervocalic position, the duration of tap closure was determined. In onset and coda clusters, a tapped closure is preceded/followed by an intrusive vocalic element; therefore, measurements included the duration of closure phase, the length of the vocalic element and the values of its F1 and F2. The mean durations of closure phases of taps encountered in the five contexts range from 16 to 20 ms. In order to perform statistical analyses, a mixed-designed ANOVA was applied. The main advantage of the test is that it takes random effects into consideration. In this study, Speaker and Context were set as the random effects. As for initial and intervocalic tapped allophones, the tests revealed that the length of a tap closure is a speaker-specific feature as highly significant differences between speakers were obtained. Somewhat surprisingly, being placed in a stressed or unstressed syllable did not have a significant impact on the duration of tap closure. As for tapped allophones of /r/ occurring in onset and coda clusters, both speaker and context seem to have a significant effect. The acoustic properties of intrusive vocalic elements preceding/following tap closures are positively correlated with those of the adjacent vowel. Like in the case of vocalic constituents of trills, the correlation is stronger with respect to F2 than F1.

It has been established that, in all Slavic languages, the trill /r/ also has two uninterrupted allophones referred to as spirantised rhotics, represented by the IPA symbol [ɻ̝], and approximantised rhotics, represented by the symbol [ɹ]. The two variants differ in the relative strength of their friction and periodic components, which was determined by measuring their harmonics-to-noise ratio (henceforth HNR). Following Bárkányi and Kiss (2010), HNR values lower than 10 dB indicate spirantised realisations, while values above the 10dB threshold were classified as approximantised realisations. Spirantised allophones were found to be relatively frequent in coda positions, i.e. post-vocalic pre-consonantal and word-final, whereas approximantised variants usually occur in intervocalic position. The HNR values of both [ɻ̝] and [ɹ] were found to be dependent on the adjacent segment. The noise component of both uninterrupted rhotics is significantly stronger when they are adjacent to an

obstruent than in word-initial or intervocalic ones. Word-final position is the only exception to the pattern. The following pause considerably lowers the HNR value of a rhotic.

Affricated rhotics constitute the least frequent variant of /r/. As noted above, they consist of a tap-like closure phase followed by a period of friction. To reflect their articulatory features, the symbol [r͡ʒ] is used throughout the book. The closure phase does not differ significantly from that of a typical tap in terms of duration, while the lengths of periods of friction are on the order of 40-45 ms. The distribution seems to be restricted to prosodically weak coda positions, i.e. post-vocalic pre-consonantal and word-final, which implies that they result from mild phonetic reduction, intermediate between tapped and spirantised variants.

The South Slavic languages, with the exception of Bulgarian and Slovene, and two West Slavic languages, Czech and Slovak, have a syllabic variant of /r/ in their sound inventories. In the case of syllabic rhotics, tapped allophones constitute the norm. Africated [r̩͡ʒ] was not attested in this context. Tapped allophones are typically preceded, sometimes also followed, by an intrusive vowel whose duration is comparable to that of phonological vowels. As a rule, intrusive segments tend to be considerably longer when a rhotic carries the main stress. The finding is relevant in the context of the sound change which has recently eliminated syllabic rhotics from the sound system of Slovene. The analysis of the spectral properties of vocalic components revealed that their acoustic characteristics resemble those of the neutral vowel schwa [ə].

Obstruentised rhotics resulted from the loss of weak jers the same as their syllabic counterparts. Contemporary Polish is the only Slavic language in which sounds of the type occur in all the contexts listed in (2); therefore, the results presented in the chapter devoted to obstruentised rhotics are based exclusively on Polish data. Obstruentised rhotics may be said to constitute somewhat of a paradox in that, despite being constituents of rare consonant clusters, a relatively high percentage of trilled variants was encountered in the recordings. The acoustic properties of such trills are determined to a great extent by the adjacent segments. Fully articulated trills normally occur between two voiced consonants. Importantly, their average vibration rate is close to 25 Hz. This finding indicates that trilling can only occur when specific aerodynamic conditions are created. Obstruentised trills differ from vowel-adjacent ones with respect to the quality of their vocalic components. Spearman's test did not reveal a statistically significant correlation between the acoustic features of the nearest phonological vowel and the F1 and F2 values of vocalic constituents of obstruentised trills. When either followed or placed between two voiceless consonants, obstruentised rhotics tend to be pronounced with a considerable degree of friction. As a matter of fact, their temporal properties resemble those of fully articulated Czech fricated trills in that they have very short closure phases, approximately 10 ms, separated by periods of friction rather than vocalic elements. The mean vibration rate of fricativised trills tends to be on the order of 32 Hz. In C_C contexts, the rhotic segment is frequently rendered either as a fricative or tap. Occasionally, affricated allophones also occur in the context.

As for the fricated trill of Czech, the observed variants were assigned to one of the three phonetic categories: fully articulated trills, one-tap trills and spirantised allophones. The incidence of fully articulated trills turned out to be unexpectedly low in word-initial and intervocalic position, whereas the variants seem to be relatively frequent in onset clusters involving a bilabial plosive. Due to having very short closure phases, on the order of 10-11 ms, the vibration rate of trilled allophones of /r̝/ is relatively high, with the mean value of 33 Hz. The overwhelming majority of the tokens were realised phonetically as fricatives, whose acoustic parameters resemble those of the sibilant [ʒ]. One-tap trills consist of one closure phase of approximately 10 ms, followed by a period of friction whose quality is similar to that of [ʒ] and whose duration ranges between 40 ms and 100 ms, with the average length on the order of 60 ms.

Chapter 10 is entirely devoted to the velar trill /ʀ/ which is said to be found in Upper and Lower Sorbian. However, in the recordings I made, only speakers of the former use /ʀ/ in their speech. According to the data, the allophones of the /ʀ/ are analogous to those that occur in German (see Wiese 2001, 2003) and include trilled, spirantised and approximantised variants. In addition, the analysis revealed that the Upper Sorbian rhotic also manifests a tendency towards deletion in coda clusters. One important peculiarity of /ʀ/ is that it has two spirantised allophones, voiceless and voiced, represented by the IPA symbols [χ] and [ʁ] respectively. The allophones occur in free variation and they constitute the most frequent variants in all contexts. Trilled variants of /ʀ/ tend to be produced in prosodically strong word-initial position. Despite being produced with a different speech organ, their average rate of vibration (23.6 Hz) is comparable with that established for apical trills. This finding clearly indicates that the vibration rate is not an inherent property of a trill, related to the articulating organ. Rather, it should be regarded as a speaker-specific feature. It was also demonstrated that the F1 and F2 values of vocalic constituents of [ʀ] are strongly correlated with those of adjacent vowels.

Traditional descriptions of the sound system of Upper Sorbian include two rhotic phonemes, namely, /r/ and /rʲ/ (e.g. Stone 1993). However, after the r > ʀ change, the uvular /ʀ/ does seem not have a palatalised variant. The analysis of Upper Sorbian words that historically contained palatalised /rʲ/ revealed that, rather than being palatalised, the rhotics are followed by the palatal glide [j]. The conclusion was drawn on the basis of measurements of the palatal on-glides in all the languages that have palatal rhotics. In Upper Sorbian, on-glides turned out to be almost twice as long as in the other languages. Thus, it can be assumed that contemporary Upper Sorbian has only one rhotic phoneme in its inventory.

5. Other scientific achievements

Since obtaining the PhD degree, my research activity has not changed dramatically as it continues to be focused on various aspects of phonetics and phonology. Nevertheless, three major areas of interest can be distinguished in my work. These include (i) lenition processes (or connected speech phenomena), (ii) cognitive linguistics and (iii) rhotic sounds.

5.1. Lenition processes/connected speech phenomena

Lenition processes can be defined as changes the minimise articulatory difficulties of speech. Given that speakers have the same speech apparatus and make use of the same cognitive processes, certain aspects of language must be shared by all languages, while others should be regarded as language-specific. In my PhD dissertation, I divide lenition processes into inertial and non-inertial ones. The former group includes spirantisation, vowel weakening and vowel deletion, whereas the latter comprises assimilation and consonant deletion. As the names imply, inertial processes are intimately related to the physical properties of the speech apparatus, especially its mass, while phonological processes assigned to the latter group do not. I further argue that inertial processes can be regarded as universal features of speech production in that they manifest themselves in any language in fast and casual speech. In rapid speech, lenition processes result from the speaker's being unable to produce complete articulatory gestures in durationally impoverished words and/or syllables. Analogous processes occurring in casual speech are usually attributed to the principle of least effort. The results of my analyses indicate that, for each inertial process, the contexts in which it occurs as well as the sounds undergoing the process form a hierarchy of susceptibility to inertia. By way of illustration, the voiced plosives /b/, /d/ and /g/ are not equally prone to spirantisation in a given intervocalic position. This finding can be accounted for by referring to the mass of the active articulator as well as to the linear distances that it must cover to reach the articulatory

target. It logically follows that, other things being equal, the difficulty of making a complete articulatory gesture is the greatest between low vowels, and the least between high vowels. As regards non-inertial processes, e.g. place assimilation, they appear to be language-specific as very similar, or even identical, consonant clusters in different languages do not necessarily trigger the same phonological processes. For instance, the nasal /n/ obligatorily place assimilates to almost any consonant in Spanish, while in English, it is not obligatory, but occurs frequently in casual speech. By contrast, the process is restricted to sequences of /n/ immediately followed by one of the velar consonants in Polish and Russian. Unlike speakers of Spanish and English, neither Poles nor Russians apply the process across word boundaries. It has also been established that a short articulatory distance between two consonants constitutes a factor that enhances assimilatory processes. Homorganic or near homorganic constituents of consonant clusters were found to affect each other to a great extent. The process regularly affects sounds that do not normally undergo assimilation. The sounds /m/ and /b/ constitute a case in point as both place assimilate to a following labio-dental segment, e.g. in English *obvious* and *nymph*, where the plosive /b/ and the nasal /m/ have a labio-dental place of articulation. The clusters tend to be reduced in the same way in Polish, e.g. *obwieś* 'scoundrel' or *nimfa* 'nymph', and most probably in many other languages. In a similar vein, sequences made up of a dental/alveolar plosive and a following post-alveolar or palatal consonant also undergo a certain degree of phonetic reduction. In English, /tr/ and /dr/ clusters, e.g. in *try* and *dry,* are frequently affricated. Affrication also occurs in Polish words involving the dental plosives followed by a post-alveolar fricative. Words such as *trzeba* 'one should' or *drzewo* 'tree' tend to be pronounced [t͡ʃɛba] and [d͡ʒɛvɔ] respectively. My considerations regarding lenition are presented in an article titled "*Inertial and non-inertial phonological processes*", which also reports on the major findings presented in my PhD dissertation (for detailed information see item II/A/1 in Appendix 3a)

Neutralisation phenomena, both phonetic and phonological, constitute the central theme that runs through my works on lenition processes. The general conclusion that emerges from the presented evidence is that, in connected speech, speakers frequently resort to processes that do not necessarily form part of the phonology of their native language. Such processes have the potential to neutralise phonetic and, sometimes, phonological contrasts between sounds, which may result in homophony. For instance, spirantisation, i.e. replacing a (voiced) plosive with a fricative does not normally apply in English, but occurs as a consequence of articulatory undershoot. If the alveolar plosive /d/ is affected by the process, it is rendered as [ð], which gives rise to pairs of homophones, e.g. *dough – though*. The article *"Lenition processes: neutralisation of phonological contrasts"* (item II/B/2) is an overview of selected phonological processes that result in homophony in several languages. A cross-linguistic approach to neutralisation processes is also adopted in two reviews *Review of Gurevich, Naomi (2004), "Lenition and contrast"* (item II/A/4) and *Review of Brandão de Carvalho, Joaquim, Scheer Tobias and Philippe Ségéral (eds). 2008. "Lenition and Fortition"* (item II/A/5).

In the case of vowels, vocal tract inertia leads to a narrowing of a vowel space, which might result in phonetic neutralisation of vowels which are close to each other in the vowel space. In the Polish language, phonetic neutralisation is very likely to affect the vowels /ɛ/ and /i/, for instance in the words *przeszłość* 'past' – *przyszłość* 'future', which become homophones in casual speech. I have devoted the following articles to address various aspects of vowel reduction: *Phonetic and phonological vowel reduction in Russian* (item II/A/2), *Phonetic and phonological vowel reduction in Russian: the case of* [a] (item II/B/4) and *Neutralisation of phonetic contrast between Polish /ɛ/ and /i/* (item II/B/17). Vowel deletion is the extreme case of phonetic vowel reduction. The acoustic analyses of recordings I have conducted so far clearly indicate that vowel deletion occurs in languages, in which unstressed

vowels do not undergo obligatory reduction to schwa, e.g. Spanish or Polish. Being flanked by two identical consonants constitutes a context which appears to be particularly conducive to vowel deletion, e.g. Pl. *s(y)stematyczny* 'systematic', Sp. *const(i)tución* 'constitution'. Vowel deletion is one of the topics discussed in two articles titled *Inertial and non-inertial phonological processes* (item II/A/1) and *Phonetically-Conditioned Processes: Vowel Deletion and Spirantisation in Polish* (item II/B/8).

5.2. Cognitive Linguistics

Recently, I have switched to Cognitive Linguistics and Usage-Based Phonology, expounded in Joan Bybee's works (e.g. Bybee 2001, 2013), to explain the phenomena observed in speech. It is assumed in both models that phonemes and other language units have a prototype structure based on actual tokens, with high frequency exemplars determining the prototype of each unit. In the context of my research into rhotics, this assumption suggests that the South Slavonic languages have indeed replaced the trilled prototype of /r/ (if it ever existed) with the tapped variant [ɾ]. Likewise, the syllabic /r̩/ of Slovene has lost its syllabic status and is pronounced with a phonological vowel. Given that the temporal characteristics of vocalic elements accompanying syllabic rhotics in other languages do not differ significantly from those of phonological vowels, the possibility of the process taking place in the languages cannot be excluded.

My growing interest in cognitive linguistics is reflected, albeit to a limited degree, in my research activity. In 2010, I conducted a pilot study which aimed at describing the level of phonological awareness in 5-year-olds. In order to achieve the objectives, I asked a group of children to perform a number of tasks such as determining the number of words in a short sentence and syllables in a word, matching rhyming words or removing either the initial or the final sound from a word. The results led to the general conclusion that the children could not perform those tasks that involved analysing words at the phonemic level. The findings were presented at the *Interdyscyplinarność w nauczaniu języków obcych* [Interdisciplinary approach to teaching foreign languages] conference and described in my only article written in Polish and titled "*Świadomość fonologiczna pięciolatków: Badanie pilotażowe*" [Phonological awareness in 5-year-olds: A pilot study] (item II/B/5).

In 2016, I participated in the *Kognikacja* conference, which was devoted exclusively to cognitive linguistics, where I delivered a plenary talk on cognitive phonology. Since then, cognitive linguistics has constituted a significant element of my research activity and didactic work (see section 6). Recently, I have submitted to *Review of Cognitive Linguistics* an article titled "A usage-based account of w-dropping in Polish" (item II/B/18). It reports the results of an acoustic analysis of samples of spontaneous speech, in which the verbal, past tense, feminine suffix {*–ała*} undergoes various degrees of phonetic reduction. According to Usage-Based Phonology, radical phonetic reduction is particularly likely to occur in high-frequency words, i.e. ones that occur more than one hundred times in a corpus made up of a million words.[3] The obtained results confirmed that, in lexical items of high-frequency, e.g. the verb *powiedziała* 'she said', the morpheme is regularly pronounced as a long [a:], while in relatively infrequent words, e.g. *cytowała* 'she quoted', the glide /w/ is present, which is reflected on the spectrogram. Interestingly, in non-morphemic [awa] sequences, e.g. in the word *skała* [skawa] 'rock' (n.), the /w/ sound does not manifest a strong tendency towards reduction.

[3] The National Corpus of the Polish Language (nkjp.pl) was used to determine the frequency of each target word.

5.3. Rhotics

As I explained in the introduction to the monograph, phoneticians and phonologists find the natural class of rhotics intriguing due to its being a heterogeneous group which includes sounds that differ with respect to their manner of articulation. In spite of this, all rhotics appear to have very similar phonological features. Another distinguishing feature of rhotics is their phonetic instability, reflected in both diachronic change and synchronic allophonic variation. Rhotic sounds can also be regarded as social markers, as shown by, for instance, Labov (1996) or Verstraeten i van de Velde (2001).

I started pursuing my interest in rhotics after obtaining my PhD degree. In 2009, I conducted a pilot study, whose results were presented in an article titled *Physical realisations of the Polish rhotic /r/ in intervocalic position: A pilot study* (item II/B/3). This publication was followed by a larger project whose design included all monotonous intervocalic contexts occurring in the Polish language. The primary objectives were to describe the amount of allophonic variation and to determine whether or not different vocalic environments are equally conducive to phonetic reduction of /r/. In intervocalic position, tapped, spirantised and approximantised allophones were distinguished, with each consecutive variant representing a greater degree of reduction than the previous one as they represent increasing degrees of opening of the vocal tract. Importantly, trilled allophones were not attested, but by no means should they be excluded. They are definitely likely to occur in formal speech or in declamatory styles. The presented data indicated that the incidence of lenited variants of /r/, i.e. spirantised and approximantised allophones, is significantly greater between two high vowels than in non-high intervocalic contexts. The results of the study were presented at a speech titled *On the phonetic instability of the Polish rhotic* /r/ delivered at the *41st Poznań Lingusitic Meeting* as well as in an article by the same title (item II/A/3). The 2010 PLM conference constituted the turning point in my research activity as the positive reaction of the audience and the feedback they offered helped me make the decision to write the monograph.

However, prior to writing the book, I conducted several small scale studies in which I explored the acoustic features of rhotics from several languages, including Polish, Croatian, Russian, Czech, Irish, Welsh and Warlpiri, which was a natural consequence of the above-mentioned piece of research. The results of most of the experiments were either presented at conferences or published in articles. Rhotic constituents of onset clusters are described in an article titled *Word-initial plosive-rhotic clusters in Polish and Croatian*" (item II/B/7). The study revealed that the apical /r/ tends to be pronounced as a tap separated from the preceding consonant by an intrusive vocalic element.[4] The duration of such vocalic segments varies to a great extent and normally has a distinct formant structure that allows for determining their distribution within the vowel space. The results also suggested that speakers of different languages might have preferences regarding the pronunciation of /r/ in this context as the Polish informants reduced the /r/ sound to a spirantised [ɻ] and approximantised [ɹ], whereas the Croatian subjects did not show such a tendency.

My next piece of research was also concerned with Polish and Croatian rhotics, but it dealt with non-vowel-adjacent r-sounds. It is worth stressing that, in both languages, sound sequences this type resulted from the loss of weak jers, a process initiated at the end of the first millennium. Importantly, in Croatian, and several other Slavic languages, rhotics in this position are said to be syllabic, while in Polish and the East Slavic languages, they are referred to as obstruentised r's due to being placed in a slot normally occupied by an obstruent. The study was conducted with a view to determining whether sounds brought into existence by the same process differ in terms of articulation. The two rhotics turned out to

[4] Naturally, trilled, spirantised and approximantised allophones were also attested, but they constitute minority variants.

differ significantly in that the syllabic /r/ is normally pronounced as a tap with a long vocalic element preceding it, whereas the pronunciation of obstruentised /r/ appears to be determined by the context. The attested variants include trills, voiceless trills, fricativised trills, taps, spirants and, occasionally, approximants. Somewhat unexpectedly, obstruentised rhotics are frequently trilled despite occurring in very complex consonant clusters. The results of the analyses were presented at two speeches I delivered at the *R-atics* 4 conference, where I had a unique opportunity to exchange ideas with leading experts in this area of study. I compared the two non-vowel-adjacent rhotics in an article titled *A comparison of Croatian syllabic /r/ and Polish obstruentised* /r/ (item II/B/12).

Since the *R-atics* 4 conference, my research activity has revolved around the acoustic features of rhotics found in currently spoken Slavic languages. The monograph is thus a consequence of several years of research into various rhotic sounds. The scope of the book was restricted to the acoustic properties of allophones of /r/, /rʲ/, /ɻ/ and /ʁ/ in various contexts. This is partially due to the fact that such analyses can be performed without having access to state-of-the-art equipment. Without a doubt, palatographic or fMRI data would provide illuminating insight and would complement the data presented in my studies.

5.4. International cooperation (institutions, domestic and foreign scientific / academic organisations and associations, reviewing for international journals)

Throughout my academic career I have always done my utmost to contribute substantially to the development of the Institute of English at Szczecin University by being a member of academic organisations as well as organising and taking part in events that allow researchers to exchange ideas. As regards scientific organisations, I have been a member of two international academic societies, namely, the *Slavic Linguistic Society* and *Societas Linguistica Europaea*. Given my research interests, I have attached more importance to the former organisation and the contacts I made there seem to have produced the desired outcome. I became a member of the *SLS* in 2009 and three years later I was elected a member of the Executive Board for a three-year term. It was during this term that I was given the opportunity to organise the *Eighth Annual Meeting of the Slavic Linguistics Society*, which brought together Slavists from all over the world. The conference was co-organised with Adam Mickiewicz University, and its most important consequence was the subsequent publication of a volume titled *New Insights into Slavic Linguistics* (eds. Witkoś J. and S. Jaworski, Frankfurt: Peter Lang), which comprises twenty six papers concerned with various aspects of Slavic linguistics. Being an active member of the SLS not only lets me promote Szczecin University, but it also provides invaluable help in establishing new contacts. In September 2020, I will have yet another opportunity to organise an international conference because the Department for Celtic Languages and Cultures at the Institute of English will be hosting the *10th Colloquium of Societas Celto-Slavica*. Since it was my initiative to hold the event in Szczecin, I will definitely be its chief organiser.

As far as conferences are concerned, I have also supported my colleagues in organising several editions of two international conferences, namely, *Us and Them* as well as *Unity in Diversity*, held at the Institute of English. Usually, my contribution is restricted to chairing several sessions during a conference. Occasionally, I am asked to review abstracts that fall within my area of expertise as well as papers included in post-conference proceedings.

Didactic work, organisational activity and dissemination of science

Teaching has always constituted one of the most important elements as far as my academic work is concerned. After graduating from Adam Mickiewicz University in 2002, I began working with students at the Teacher Training College and Collegium Balticum in Szczecin, where I taught courses in practical phonetics, descriptive grammar and general English for students of English philology. Since obtaining the PhD degree in 2008, I have been employed in the Department of English (currently Institute of English, US). In the years 2009-2014, I also had a secondary job at the State Vocational College (PWSZ) in Gorzów Wielkopolski and I had some classes at the Teacher Training College and Collegium Balticum. In all institutions, I had an opportunity to teach general English as well as a large range of subjects focused on different aspects of linguistics to both full-time and extramural students. The only subjects I have taught since throughout the period include general English and phonetics and phonology. In addition to that, I have given lectures on the following subjects: introduction to linguistics, descriptive grammar, contrastive grammar, the history of the English language, pragmatics and the world's varieties of English. In the academic year 2014/2015, I also conducted a series of discussion sessions at which we addressed various aspects of language change. For the last two years I have taught a cognitive linguistics course to first-year M.A. students of Cognitive Studies at the Institute of Philosophy (Szczecin University). This introductory course familiarises students with the major tenets of Cognitive Linguistics and addresses issues such as the symbolic nature of language, prototype, concept, metaphor or grammaticalisation.

While working at several institutions of higher education, I have also had the opportunity to share my experience with undergraduate and graduate students and assist them in writing their diploma papers. Naturally, the main theme of my B.A. and M.A. seminars relates to my area of expertise, i.e. lenition processes and connected speech phenomena. I always insist on my seminar students doing a piece of research, which involves designing an experiment, recording samples of speech and analysing them acoustically. To date, I have successfully supervised 36 B.A. and 21 M.A. papers. As a consequence of supervising papers, I have also sat on many examination committees not only as a supervisor, but also as a reviewer.

With respect to my other duties related to teaching, for several years I have regularly taken part in numerous B.A. and M.A. exams conducted at Szczecin University as well as the other institutions of higher education I have worked for. Obviously, my participation in the proceedings has always resulted from being either the supervisor or the reviewer of a B.A. or an M.A. paper. It is also worth mentioning that, while working at PWSZ in Gorzów Wlkp., for three years I ran a student research circle called *Lingua*, which had been established on my initiative in 2010. The main objective of the circle was to kindle the students' interest in linguistics by organising speeches as well as reading linguistic literature and discussing ideas.

As any employee of the Institute of English, I also fulfil additional, non-didactic, organisational duties. In the years 2009-2011, I was a member of the Scientific Board of *Annales Neophilogiarum* – a journal published by the Faculty of Neophilology, US. I realised how much experience I had gained from being involved in the publication process when I started working on *New Insights into Slavic Linguistics*. Another non-didactic task I have performed involves enrolling students. In 2011, I was a member of the Recruitment Committee, while this year I have been appointed to be an examiner. I examine candidates who do not have a B.A. degree in English in order to determine whether they are sufficiently proficient in English to study at the M.A. level. Building up the network of partner universities can also be regarded as an essential element of organisational activity as it facilitates the exchange of ideas and leads to raising the quality standards of research and

teaching. Even though it is not my primary duty, I managed to launch an exchange programme with the University of Rijeka.

Being an academic teacher, I am also expected to popularise science and research. As for popularising science, the Department of Celtic Languages and Cultures, of which I am a staff member, holds two annual events, namely, the Irish Week and Welsh Days, which always include speeches and workshops for secondary school students. I take part in the events not only as an organiser, but also as a speaker. In addition to that, in 2017, I delivered a speech for students of schools under the patronage of the Institute of English. While working at the State Vocational College in Gorzów Wielkopolski, I also made an effort to popularise science among secondary school students, which was one of the objectives of the Lingua circle. During the three years, I organised several open lectures which addressed various linguistic phenomena, e.g. language change, borrowing, media discourse. With regard to promoting research, I usually ask my colleagues from other universities to give a talk to our students. As a consequence of my efforts, our students had an opportunity to attend guest lectures delivered by speakers from the US, Australia, South Africa and several Polish universities.

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